

TEXTILE BULLETIN

OL. 66

APRIL 1, 1944

NO. 3

Better Long Draft Spinning No Oil-Stained Yarn

By Using—

TRADE MARK

REGISTERED

NON-FLUID OIL

IN U.S. PAT. OFFICE &

FOREIGN COUNTRIES



Long draft frames justify their cost only when they give full production.

Drip-less, waste-less NON-FLUID OIL assures this by clean, dependable lubrication that keeps frames in steady operation.

By staying in Roll Necks, NON-FLUID OIL stops damage to yarn and oil rot of leather and Cork Cots—outlasts oil 3 to 5 times, saving on oil and application cost.

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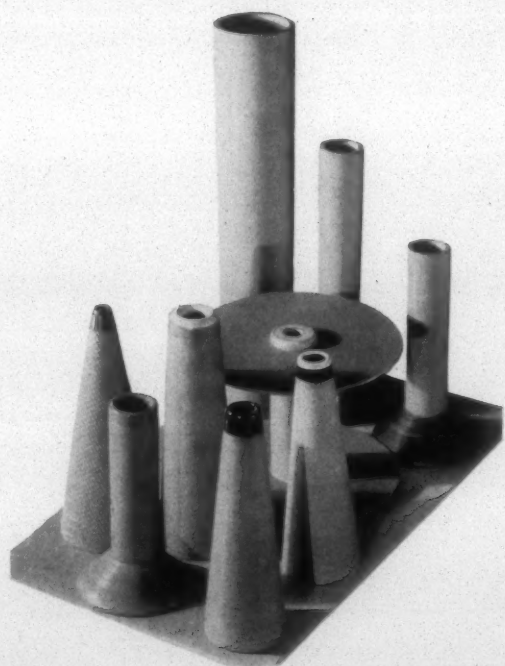
FREEDOM OF

Opportunity

This Freedom transcends all others. If we have it we have all other Freedoms automatically. It has been facetiously said that a man in jail has Freedom of Religion, Freedom of Speech, Freedom from Fear and Freedom from Want.

For two hundred years this country has stood for "opportunity" for every man from the cradle to the grave.

The history of SONOCO Products Company is an example of that kind of freedom. ... Given that same freedom for another forty-five years in a land where all business, large or small, is invited and encouraged to continue its development and progress unhampered by regimentation, the future of America can be read in the stars.



SONOCO MAKES *EVERYTHING* IN *PAPER CARRIERS*

SONOCO PRODUCTS COMPANY

HARTSVILLE

S. C.

DEPENDABLE SOURCE OF SUPPLY



BUY MORE WAR BONDS

Published Semi-Monthly by Clark Publishing Company, 218 W. Morehead St., Charlotte, N. C. Subscription \$1.50 per year in advance. Entered as second-class mail matter March 2, 1911, at Postoffice, Charlotte, N. C., under Act of Congress, March 2, 1897.

INDEX TO ADVERTISERS - PAGE 37

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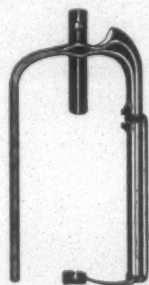
A Smooth, Glossy, Black, Rust-Resisting Finish For Flyers

FLYERS PRECISION-BALANCED

With Our Own

Ideal Balancing Machine

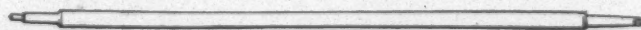
ROVING FRAME SPINDLES
COMPLETELY REBUILT



WORN FLYER BARRELS DRAWN IN
TO STANDARD TAPER AND SIZE

With Our Own

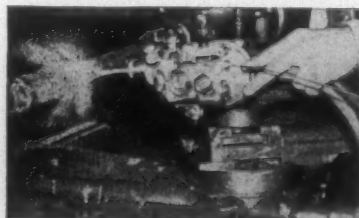
Ideal Swaging Machine



WE ARE PIONEERS IN TEXTILE METALLIZING

Spinning and Twister Spindle Blades Built Up to Original Diameters

Spinning and Roving Frame Top Rolls Built Up with Steel In Middle Where Saddle Rides. (This Reduces Friction Between Saddle and Top Roll, and is Especially Beneficial on Long Draft Frames)



Other Parts on which we have found Metallizing to be Successful and Profitable are:
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IDEAL MACHINE SHOPS

BESSEMER CITY, N. C.

20TH YEAR OF CONTINUOUS SERVICE TO THE TEXTILE MILLS

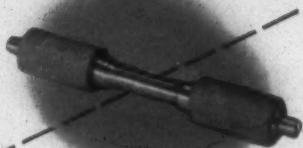
Now Available **ARMSTRONG'S NEW**

This new cot offers...

1. **LONG SERVICE**—Accotex Cots are tough. And they can be rebuffed.
2. **GOOD DRAFTING**—Accotex Cots retain their excellent grip, because they resist slicking.
3. **REDUCED EYEBROWING**—The resistance to slicking minimizes eyebrowing.
4. **REDUCED LAPPING**—Accotex Cots have little affinity for textile fibers and are nonsweating.
5. **GOOD START-UP**—Accotex Cots are nonthermoplastic and resist flattening.
6. **SOLVENT RESISTANCE**—Accotex Cots are not affected by oil, water, dyes, or textile solvents.
7. **SEAMLESS CONSTRUCTION**—Accotex Cots have no seams to break open or shorten service life.
8. **QUICK ASSEMBLY**—Accotex Cots are ready glued.

WHAT'S BACK OF ACCOTEX

Armstrong's { 84 years' experience with cork
27 years' experience with rubber
22 years' experience with roll coverings
9 years' experience with synthetic cots



ACCOTEX COTS

... improved roll coverings with **CORK'S GRIP**
plus **SYNTHETIC RUBBER'S TOUGHNESS**

THE new, improved Armstrong's Accotex Cots are really a *new type* of textile roll covering. Made of a special cork-and-synthetic-rubber composition, they offer you—in one cot—the superior friction of cork *plus* the longer-wearing qualities of synthetic rubber. And you can get them now... thanks to the current easing of restrictions on the materials that are required for their manufacture.

These new cots, known to many mill superintendents as Accotex NC-727 during a year and a half of mill-testing, are already serving 750,000 spindles. Mills report that cork-rubber Accotex Cots have spinning properties far superior to those of any synthetic roll covering now in general use. They find that these improved Accotex Cots are nonslicking, that they retain their grip, and reduce "eyebrowing." There's less lapping

up, too, because these cots don't "sweat." They are also highly resistant to solvents. And, after a long initial life of spinning quality yarn, Accotex Cots can be rebuffed three or four times for extended service.

These unique cots are a product of Armstrong's long experience in the use of cork and of synthetic rubber for textile roll coverings... plus specialized knowledge gained by Armstrong as the originator and largest producer of cork-and-synthetic-rubber compositions.

In addition to cork-rubber Accotex Cots, Armstrong can supply Accotex Cots made of plain or soft synthetic rubber for special uses.

For full information, samples, and prices of Accotex Cots, see your Armstrong representative. Or, write direct to Armstrong Cork Co., Textile Products Section, 8204 Arch St., Lancaster, Pa.



ARMSTRONG'S ACCOTEX COTS

CORK COTS • ACCOTEX APRONS

in WAR or PEACE

ARKANSAS PRODUCTS
Serve Dependably

FUNGICIDE: A mildew proofer made in various types to meet all government specifications.

ARKO FIRE RETARDENT: For flame-proofing uniform cloth, felt and all types of rayon and cotton fabrics including theatrical drapes.

***AQUAROL:** A water repellent for uniforms, overcoatings and other military fabrics; also all civilian garment cloth.

***PARAMINE:** A cation active softener for processing cotton and rayon cloth to obtain a soft, smooth, pleasing finish.

***ALGEPON P.:** A retarding agent for vat and sulphur dyeing to prevent premature oxidation of the dye-stuff or in other processes when necessary to retard exhaustion to obtain a uniform shade.

***PARAPON S. A.:** A highly efficient leveller and softener used in dyeing and finishing all types of viscose and acetate rayon. Excellent for processing tricot cloth.

ARKOLA G.: For finishing rayons to impart a full, better feeling hand and additional weight. An excellent substitute for glycerine for printing and finishing.

***CULOFIX:** Used as an after treatment in last rinse to prevent bleeding of direct dyed cotton or rayon in water.

***DIAZONOL A. C.:** For boiling out cotton cloth in pressure or open kiers to produce greater absorbency and cleaner material. Excellent for preboiling knitted cloth in preparation for chlorine bleach. Also used with good results for boiling out cotton or rayon cloth in the jig.

*And a Complete Line of Oils, Chemicals, Softeners and Finishes
For Wet Processing All Textile Fibres*

**Reg. U.S. Pat. Off.*

ARKANSAS CO. INC., NEWARK, N. J.

Established 40 years

THE FOUR FREEDOMS: SPEECH, RELIGION, FEAR AND WANT

By FULTON LEWIS, JR.

YOU have heard a great deal about the Four Freedoms. They have been advertised and propagandized and ballyhooed to the four corners of the earth, translated into dozens of languages, as the principles for which we are fighting this war, and more particularly they have been advertised to the four corners of the earth as the essence of Americanism and American philosophy.

Let's take them up one by one. The first two of them, Freedom of Religion and Freedom of Speech, certainly, there is no controversy about that. The little clique of master minds who conjure up these ideas behind the scenes and these trick phrases behind the scenes and do it constantly, working for tighter and tighter government control of everything by Washington, were not the ones who thought of those first two Freedoms, Freedom of Speech and Freedom of Religion. Those date back hundreds of years to strong, courageous people who came across the ocean and settled this country. Those date back to Thomas Jefferson and the other founding fathers of this American Republic. They are axiomatic now. There is no one of all the millions who are listening to this broadcast who would live in a country that does not have both of them.

But what comes, then, after those first two? What are the other two of the Four Freedoms, and the only other two, the complete remainder of American philosophy as expressed in this statement? They are Freedom from Fear and Freedom from Want—two very nice luxuries if you are able to afford them. But it wasn't freedom from fear and freedom from want that made this nation what it is, or what made the American people the strongest people on the face of the earth. On the contrary, it actually was fear and want themselves and the struggle of individual men to make themselves free of both things.

If you want to consider these Four Freedoms to be a political vote-getting document, perhaps those last two are all right. If you want to represent them as real American principle, I am afraid not. They smack too much of a government pretending to be all things to all people. Frankly they smack too much of the old WPA handout system: you support my kind of government and that government will give you this, freedom from want.

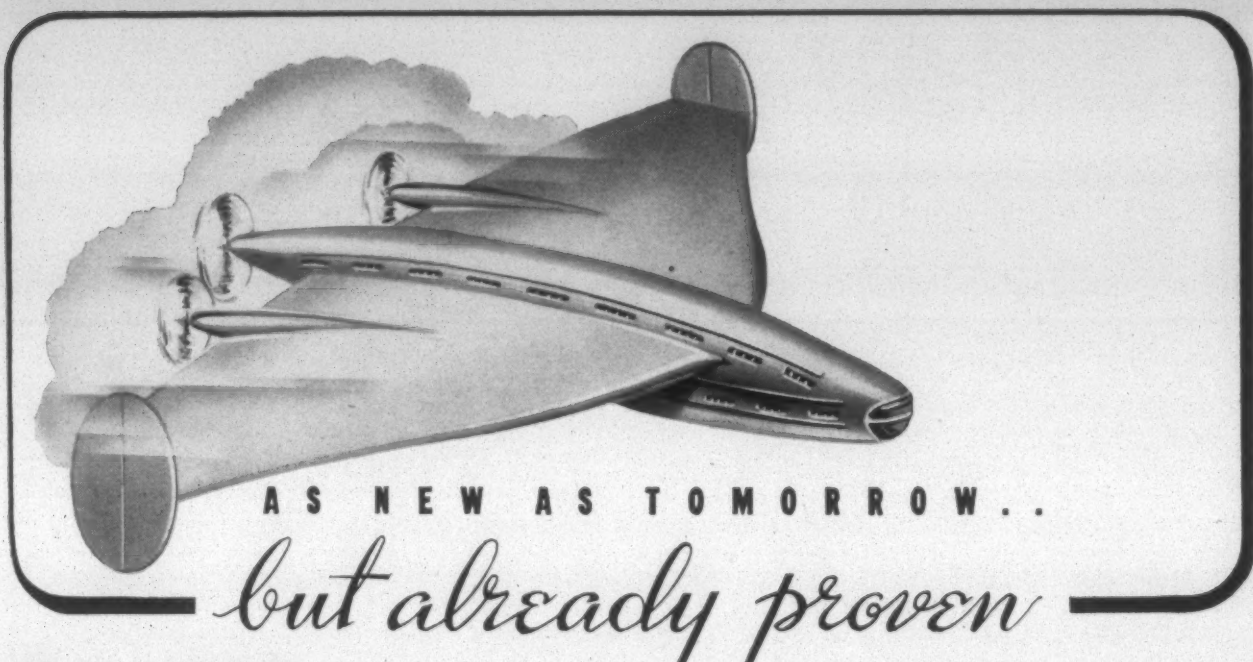
That is a straight case of selling gold bricks. No government can give its people freedom from want, because the very people themselves are the government, and the only place the government can get the materials, the food and the clothing and the shoes and the whatnot with which to provide that freedom from want which they promise is

This article was not written specifically as a guest editorial for *Textile Bulletin*, but is an abstract of a Mutual Network broadcast by Commentator Lewis last year. Because of the recent revival of interest in the Atlantic Charter and the Four Freedoms, it is felt by the editors that these observations are worthy of consideration.

from the very selfsame people to whom they are promising to give it. That is a humbug game in the most virulent sense of the word, and if any private citizen were to practice a similar game on his neighbors he would be jailed for obtaining money under false pretenses.

But the real tragedy, the really frightening and tragic part of this expression of Americanism as represented by the Four Freedoms, is that that is where the statement of American philosophy stops. The tragedy is that the minds in Washington who conjured the very catchy idea, that very catchy phrase, and sold the idea to the President for promulgation to the entire world, those people were not even sufficiently familiar with the true philosophy of this country to include what is the real American freedom, the only thing that has made this nation what it is, the one thing that must make it what it is in the future if we are to continue to maintain our leadership and our greatness in the world, the fifth freedom, which is freedom of individual enterprise, freedom of initiative, freedom to work a little harder and longer than your neighbor does, and therefore to have a better home than he has; freedom to cut the lawn a little more often and have the lawn look better; freedom to climb up out of the level of the rest of the world and build a better standard of living; freedom to raise your children with more advantages, give them a better education than you yourself had; in other words, freedom to rise in the world if you are willing to do the work to achieve that rise. And as a corollary, of course, there goes along with that always the obligation of every man to row his own weight in the boat, to do his share in the rebuilding of America, or if he refuses to do so, to drift aimlessly around in the middle of the ocean, washed by the tides.

That is the Fifth Freedom, ladies and gentlemen, Freedom of Individual Enterprise. That is something that government can give to its people honestly. Without it, there can be no tomorrow for this country as we have known this country in the past. And to me it is shocking and frightening in the extreme that those in Washington who conceived the Four Freedoms didn't have sufficient acquaintanceship with real Americanism to have included in their list the most important and the most vital freedom of all.



AS NEW AS TOMORROW..

but already proven

WHITIN STAPLE RAYON EQUIPMENT

In the critical days ahead, time and production will be of the utmost importance! Time and production lost in testing unproven, untried, newly designed models can never be regained.

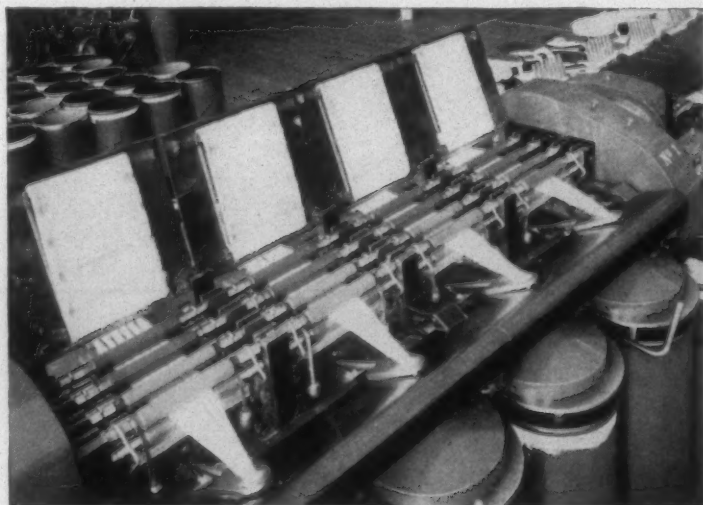
"Blueprint" machinery always arouses keen anticipation—and at the proper time is definitely essential. Our own Engineering and Research Departments are busier than ever.

BUT—to cope with the situation at hand, where outmoded and obsolete machinery must be replaced quickly, where production must be stepped up—not lost, we think you will agree that modern, dependable, proven equipment will be most practical.

Fortunately our line of machinery for processing staple rayon was developed just prior to the outbreak of war and has already passed with honors the most severe testing stage—actual mill operation.

Our Model "L" Drawing Frame is an outstanding example of this type of proven

equipment. In addition, this group includes 40" Full Roller Cards, Super-Draft Roving Frames, Long-Draft Spinning Frames and Twisters, all especially developed for processing staple rayon.



Unusual features on the Whitin Model "L" Drawing, include large-diameter bottom rolls, specially designed trumpets, extra-sensitive front stop motions, spring weighting on top rolls and adjustable top clearers.

WHITIN MACHINE WORKS

WHITINSVILLE, MASS.

CHARLOTTE, N. C.

ATLANTA, GA.



Can King Cotton Retain the Textile Throne?

By ARLINGTON FRYBARGER

AN affirmative answer is given by Dr. Harold H. Webber, associate director of research for the National Cotton Council. "Yes!" avers Dr. C. L. Lundell, head of the newly-created Institute of Technology and Plant Research at Southern Methodist University in Dallas, Tex. "Yes!" confirms J. Willis Gunn, National Cotton Council representative.

"If"—stipulate all three men, "certain laboratory experiments in which we are now engaged prove successful."

The cotton industry as a whole is pinning its hopes to the success of the institute's laboratory research into the genetical control of cotton propagation for the development of specific plant characteristics, for cotton men realize that the dwindling cotton markets have demanded a remedy—and a quick one!

Faced by the bitter realization that cotton production had steadily dropped to half the production of 1930, cotton men are getting busy. Textile manufacturers' requirements carried into the research laboratory, pressure exerted on governmental crop control groups, and a scientific approach to the general needs of the industry, constitute their three-way program that is already showing results.

The Institute of Technology and Plant Research was inceptioned the second week of February, 1944, in direct affiliation with the National Cotton Council, which made possible a flying start for the university by rendering available the results of several years ground work and data

provided by the council's research staff work in its experimental and plant introduction stations at Acapulco, Mexico, and also in Central America.

Why is pure research science considered to be so important in determining the future destiny of the cotton business? Ranking cotton experts concur in placing at the top of the list of reasons for the most serious downward curve of cotton markets, that of the inroads into old cotton markets made by the rayon industry.

Why has the rayon industry been able to shoulder its way into the domain of King Cotton? By virtue of the mechanical

ease (merely the adjustment of the set on a spinnerette), with which rayon fiber may be produced to the various specifications of manufacturers of finished products. It is to overcome this mechanical advantage of the rayon industry, that the scientists are now bending their heads together.

Dr. Webber offers the explanation, "In years past, rule of thumb methods, and haphazard efforts to improve the various species of cotton had sufficed, because of an assured market, and by the absence of any worthy competitive commodity. In recent years the rayon industry has supplied the reason for a new urgency in developing special fiber characteristics in species of cotton."

"For example," Dr. Webber continued, "the thread industry requires a cotton fiber of maximum strength, since the tensile strength of the thread depends directly

(Continued on Page 46)



Looking over the 110-acre site of the plant introduction garden and experiment station purchased by the Southern Methodist University Institute of Technology and Plant Research in Dallas, Dr. H. H. Webber, left, associate research director for the National Cotton Council, and Dr. C. L. Lundell, right, botanist, plant explorer, and head of the institute's staff, discuss their plans to make cotton literally grow the way they want it to.

Resin Finishing of Synthetic and Natural Yarn Blended Fabrics

By T. S. McDUFFEY — Part Two

The initial article of this series dealt with the general handling, preparation, bleaching and dyeing of these fabrics to obtain satisfactory bottomed goods so that good dyeing and permanent resin finishes may be applied uniformly from lot to lot. Dyestuff requirements were discussed and lists of direct, direct dyeing and developed acetates and vat colors were given, showing selected colors from which dyers, chemists and finishers could obtain working formulae, which, with careful experiments and testings, should help them to establish the best color combinations available for their particular type of goods under process. This article takes up the discussion of melamine resins and briefly outlines those points of most importance in practical applications.—Technical Editor.

MELAMINE resins have enjoyed wide industrial application in their use by manufacturers of refrigerators, electric appliances and stove parts where high heat resistance is necessary. In these various industrial applications they have been used chiefly because of quick curing properties which produce hard films possessing exceptionally high resistance to alkalis, water, solvents and greases. Melamine resins, being of the thermosetting type, were workable in combination with nitrocellulose lacquers. In industrial application, melamine resins possess considerable value because of the high gloss of the cured film plus its property of retaining gloss and freedom from turning yellowish on storage under rigid testing conditions.

Research and textile development chemists, in their search for resins which could be used on blends of natural and synthetic yarns, have worked out methods for applying melamine resins to these fabrics with increasing success over the past few years. The melamine resins for textile fabrics have proven of particular interest to finishers desiring to apply resin finishes to fabrics having acetate rayon yarn in their construction. Resins possessing amine in their chemical make-up have a greater take-up on acetate rayons under certain conditions than other types. This is due in a degree to the affinity of amines for acetate cellulose under certain conditions and through proper manipulation of the application methods and curing. Melamine resins are water white resinoids resulting from the condensation of melamine and its isoform with formaldehyde.

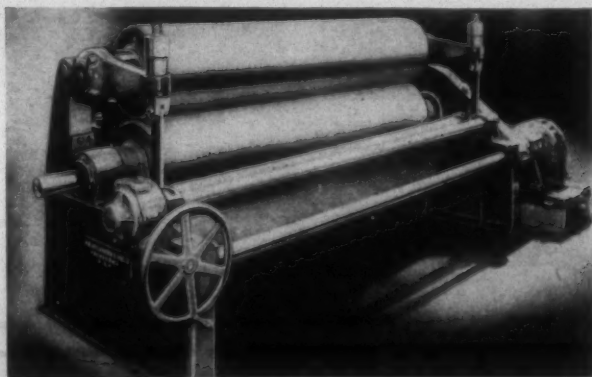
The melamine resins are applied similarly to other resins; that is, they are dissolved properly—then when ready to be applied to a fabric, a catalyst is added to the compound. These resinous compounds can be only applied in

the presence of a catalyst which might be also defined as an accelerator, a term used in the rubber industry for compounds acting in a similar capacity for the curing and vulcanizing of rubber. The type of catalyst used determines the nature of the end product that gives the finished fabric the desired permanent crush-proof finish.

A catalyst is a substance which aids in the chemical reactions without itself becoming permanently changed at the end of the reaction. The catalyst does not change the final equilibrium; it simply changes the rate at which this equilibrium is approached. An alkaline catalyst may cause the resin to combine and form a different end product than when an acid catalyst is used. This difference is chiefly in the physical state of the end product. Catalysts may be classified as positive and negative in their nature. The positive type speeds up the reaction while the negative type slows down the reaction. These detailed comments are made regarding catalysts because many textile finishers and chemists do not give catalysts sufficient study and attention. Careful study of catalysts on each type of resin will pay dividends in uniformly finished fabrics, as plant officials can check carefully as to feel and hand of goods with a better understanding. The most commonly used catalysts are ammonium chloride, di-ammonium phosphate and ammonium thiocyanate.

Ammonium chloride is of a slightly acid nature, showing a pH of approximately 6.0 and, when added to a melamine resin mix, remains stable but for a short period of one or two hours. When a prepared melamine resin mix is allowed to stand for three to four hours, the resin will begin to polymerize and this makes the mix useless for further application. A melamine resin mix prepared with

(Continued on Page 45)



Application of resin mixes on piece goods may be carried out very satisfactorily on the H. W. Butterworth & Sons Co. two-roll, micro-set padder, shown above.

Announcing

SELLOGEN A S

SELLOGEN M



**All-purpose, powdered wetting agents and detergents
for wool...for cotton...for synthetic fibers**

● These new, highly efficient products have a wide range of uses. They give equally satisfactory results with *all* textile fibers. Used with **WOOL** for rinsing after fulling, scouring and dyeing yarn and piece goods, backwashing and dyeing tops. With **COTTON** for kier boiling, dyeing, soaping and scouring. With **SYNTHETIC FIBERS** for dyeing and scouring. These twin products can bring important, time-saving advantages to your business. Samples on application.

SELLOGEN A S

has extreme wetting properties.

SELLOGEN M

combines wetting with high detergency. Resistant to hard and limy waters—extreme cleansing action, excellent sudsing. Can be used in acid or alkaline solutions. Recommended as a penetrator in dyeing, in boiling off.



JACQUES WOLF & CO.

Chemicals

PASSAIC, N. J.

WAREHOUSES: Providence, R. I., Philadelphia, Pa., Utica, N. Y., Chicago, Ill., Greenville, S. C., Chattanooga, Tenn., Knoxville, Tenn., Charlotte, N. C., Milwaukee, Wisc., Columbus, Ga.

New Firm To Assist Textile Mills in Plant Organization

The Plant Organizing Methods Co. has opened offices at 60 East 42nd Street, New York 17, N. Y., to "bridge the gap between the engineering and management aspects of industry—particularly in textile mills."

The new concern will specialize in: (1) reducing, reutilizing and controlling waste; (2) introducing an original system of continuous preventive maintenance, and establishing related controls; (3) installing simplified supply controls, combined with efficient purchasing routines and effective supply room layouts; and (4) organizing control laboratories and arranging testing methods and schedules. (This phase of the work will be of special interest to research-conscious mills in preparing them for post-war development.)

Herbert L. Werner and Rudolph M. Ashner are the principals of the Plant Organizing Methods Co. Each has had a 16-year background and experience on three continents, predominantly in textile mills.

Mr. Werner (of Werner Textile Consultants) established headquarters in this country in 1938, after a decade as officer of the Gherzi Textile Development Co. of Zurich, Switzerland, where he was consultant to more than 100 mills throughout Europe and beyond. He has been retained by a number of well-known mills in New England and the South to help increase production, improve quality and introduce new manufacturing methods. Mr. Ashner has served as industrial consultant for many big firms in Europe, England, the Near East and, more recently, in this country where he has successfully developed control methods for many prominent textile mills.

A British textile mission, headed by Sir Frank Platt, United Kingdom cotton controller, has arrived to tour America's cotton textile industry.

While the United States itinerary is indefinite, the British Information Service said the group expected to be in Memphis, Tenn., March 29 as guests of the National Cotton Council, and during April would visit the textile centers of West Point, Ga., Spartanburg and Greenville, S. C., Charlotte, Kannapolis and Greensboro, N. C., and Danville, Va.



When Lieutenant Leroy Springs became a full-fledged Army Air Corps pilot last month at Spence Field, Moultrie, Ga., among those congratulating him was his father, Colonel Elliott White Springs, the president of Springs Cotton Mills. Lieutenant Springs' wings, pinned on by his father, were those used by Colonel Springs in the first world war. Shown above are (left to right) Lieutenant Springs, Mrs. Elliott Springs, Colonel Springs, and William J. Vereen, president of Moultrie Cotton Mills. (Army Air Corps photo.)

Expanded Textile Research Institute Program Outlined in Booklet

An outline of the expanded program of the Textile Research Institute, Inc., has just been published by that organization in booklet form under the title "A New Opportunity for All Textile Men Through Research."

After stating the need which faces the textile industry, the booklet states that the choice between the alternatives of failure and survival lies through research. It highlights particularly the public interest phase of industrial research.

An important section of the booklet dispels the confusion that has arisen in the minds of textile manufacturers due to the emergence of several new textile research groups. It arranges these by patterns, explains their primary functions, and orients them in relation to each other and to the field of textile research as a whole. "The impression has been created that a lot of new organizations have sprung up over-night to bid for the textile manufacturer's dollar, for identical purposes," it is stated. "Actually, the amount of basic duplication in the field is amazingly small." This section concludes with an outline of the functions of the Textile Foundation, with which the Textile Research Institute, Inc., has a close working arrangement.

Coming to the program of the institute itself, the booklet details its five major phases: fundamental research, applied research, economic research, graduate training, and research information service.

After fully developing the theme of what this expanded program means to a textile manufacturer, the booklet shows how each manufacturer can participate: by presenting the details of the institute's financing plan, and the privileges of the different types of membership. Also included is information about the personnel and present membership of the institute, and the tax status of research expenditures. Copies of the booklet may be secured on request from the Textile Research Institute, Inc., 10 East 40th Street, New York 16, N. Y.

Institute of Textile Technology Gets Charter

The Virginia State Corporation Commission has granted a charter of incorporation for the Institute of Textile Technology in Charlottesville to a group of trustees representing 28 textile mills.

The charter disclosed the purpose of the institute as designed to maintain an educational institution and to promote scientific research and processes related to the textile industry. The charter provides that none of the profits shall inure to the benefit of any member or individual and prohibits its use of propaganda designed to influence legislation.

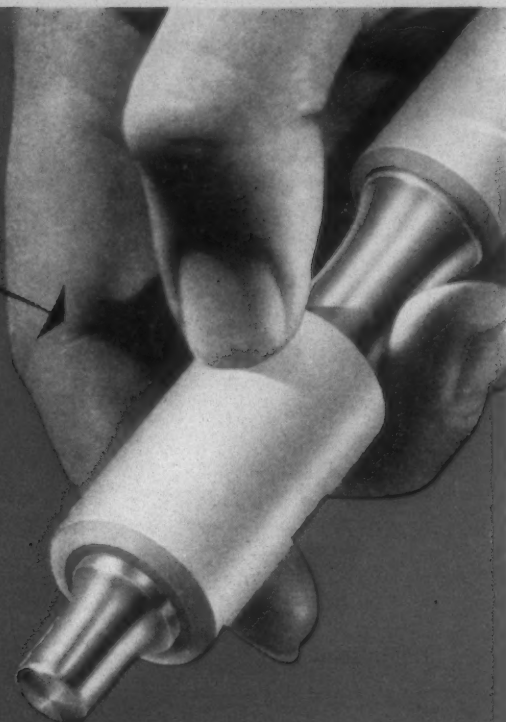
Under the charter the corporation may own up to 50,000 acres of land and it is empowered to design textile apparatus, to promote research into scientific processes, to secure patents, and to receive donations or endowments from any source.

Listed as president of the corporation was Ward Delaney, Charlottesville, while Arthur M. Allen, Providence, R. I., was named secretary.

Construction of the newly-chartered institute will begin as soon as priorities can be obtained on vital materials, Mr. Delaney said. No site has yet been acquired. A staff of experts is now being assembled to serve on the faculty.

YOU CAN'T GROOVE

DAYCO
Synthetic Rubber
ROLL COVERINGS



**They Last Far Longer...Protect the Yarn...
Increase Production**

**THESE DAYCO FEATURES
TELL THE STORY**

1. Improved drafting
2. No grooving —
less ends down
3. Unaffected by
temperature changes
4. Lower net roll costs
5. Longer service life
6. Easy to apply
7. Proper cushioning
8. Not affected by hard ends
9. Static free
10. Oil resisting
11. One-piece
tubular construction
12. Produce more
uniform yarn

Fingernails can't groove Dayco Synthetic Rubber Roll Coverings. Neither can moths or foreign matter. Extremes of temperature can't affect them and they are completely immune to any deterioration which might injure the yarn. They are so good that at a recent meeting of mill executives, 90% voted Dayco the greatest improvement to more efficient spinning.

These Dayco Synthetic Rubber Roll Coverings are the direct result of Dayton Rubber's years of research and experience in the development of synthetic rubber products. Change to Dayco and you'll get *more* uniform yarn at less cost per month of use.

**LET'S ALL
BACK THE ATTACK
WITH WAR BONDS**

THE DAYTON RUBBER MANUFACTURING CO.
Dayton 1, Ohio • Waynesville, N. C.

Famous DAYCO Synthetic Rubber Products Since 1934
MAIN SALES OFFICE: Woodside Bldg., Greenville, South Carolina

Roll Coverings by **Dayton**
REG. TRADE MARK THE DAYTON RUBBER MFG. CO.
Rubber

Officials Praise Records of Two Plants

TWO North Carolina textile plants were hailed last month for meritorious participation in the huge task of supplying the armed forces of this country. These latest winners of Army-Navy "E" pennants are North Carolina Finishing Co., of Yadkin, and Firestone Cotton Mills, Inc., of Gastonia.

In ceremonies at Yadkin March 18 Colonel Thomas W. Jones, director of procurement for the Philadelphia Quartermaster Depot, presented the finishing company's "E" flag as a representative of the Army, while Captain William S. Popham, commander of the Naval ROTC unit at the University of North Carolina, presented "E" pins.

W. F. Robertson, Jr., general manager of the plant, in accepting the "E" flag, stated that officials and employees recognized the "responsibility to strive unceasingly in the months to come to improve and increase our efforts until victory is ours."

Captain Popham presented "E" pins, which each employee will be entitled to wear, to Clifford Myrick, Laura Walser and Reuben Walser, employee representatives.

Addressing the assembled hundreds of workers March 27 Brig.-Gen. H. F. Stafford of the Army's Ordnance Department asserted that "every one of you in the Firestone Cotton Mills should feel a glowing sense of pride in your splendid accomplishment."

The "E" flag was accepted by Harold Mercer, vice-president and general manager of the mills, who expressed the company's appreciation "for the fine spirit and whole-hearted co-operation" of the employees "whose loyalty, skill and efficiency have won the nation's highest industrial tribute." The pins for the workers were accepted by a group composed of Ben Davis, Mrs. Mattie McDaniel, Mrs. Bessie L. Gaines, Berry Prince and O. L. Little.

Captain A. T. Clay, commandant of naval units at Duke

University, attending the ceremony as the Navy's official representative, presented these pins to Private Robert Williams, former employee of this mill, wounded overseas and now a patient at an Army hospital. Private Williams then presented the pins to the five employee representatives.

Master of ceremonies was Hugh James, who read congratulatory telegrams from Undersecretary of War Robert Patterson and John W. Thomas, chairman of the Firestone



Harold Mercer, R. A. Firestone and Ben Davis (left to right) display the pennant presented to Firestone Cotton Mills.

Tire & Rubber Co. Top ranking representative of this company at the ceremony was Russell Firestone, son of the founder, who was guest of honor at a luncheon prior to the award ceremony.

Union Bleachery of Greenville, S. C., which was granted its first Army-Navy "E" last Aug. 26, has been notified that continued excellent production has merited the addition of a white star to the plant's pennant.



Various persons who took part in the North Carolina Finishing Co. award program heard Governor J. M. Broughton of North Carolina, as master of ceremonies, open the program.

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Long Draft Spinning and Synthetic Fibers

Discussed by Piedmont Section

THE first of the two main topics dealt with when the Southern Textile Association's Piedmont division met at Charlotte, N. C., March 4, was long draft spinning. This part of the discussion was led by E. C. Gwaltney, director of research for Saco-Lowell Shops, who explained the background and principles of the Shaw long draft system. Mr. Gwaltney's explanation of the system and the questions which followed are presented below.



E. C. Gwaltney

MR. GWALTNEY: Since the time Wyatt and Paul found that we could reduce the strand of cotton from the card to the finished yarn size by the use of rollers instead of the primitive way of forming the thread with the thumb and forefinger, machinery builders have exhausted every means that has occurred to them to increase the amount of draft and improve the quality of drafting. The rolls in use today are substantially the same as those used in Arkwright's original water frame. The first advance came with what is commonly known as slip draft. That is, the rolls are set on the longer fibers instead of being spaced over the longest fiber.

This was first done by the use of the conventional three pairs of rolls, the second bottom roll being smaller than the others and the top second roll being made very light—so much so that the front rolls could drag the fibers from under the second pair. This made stronger and better yarn and allowed some increase in draft, especially on finer yarns, where greater draft was more profitable and combed cotton was used. The closeness with which two pairs of rolls could be set, however, is limited by geometry. You cannot get the centers of two circles close unless the circles are very small.

Fernando Casablanca substituted aprons for the small slip draft roll of the old three-roll system and brought the control of the fibers much closer to the bite of the front roll, thus producing the first real long draft system. This was followed by the Roth, using only one apron and a very small top roll at the bite of the front rolls. These two systems were generally adopted, and most of our spinning today uses one or the other.

We soon reached the practical limit of draft on both systems; and pressure was brought to increase the draft still more, with, if possible, better product. Several years ago Ben Shaw, who had had many years of experience as an engineer and agent in mills in New England, had the idea he could improve the drafting process. The difference in his idea of drafting, from the Casablanca and the Roth,

was that the pressure on the rear end of the fibers being drafted should be greater on the rear ends than at the point of release to the front rolls, and that this pressure should be graduated.

The principle on which Shaw has worked is the graduated release of pressure on the tail end of the fibers. I might say that all problems of long draft are more concerned with what happens to the rear end of the staple than the front end. All long draft systems use the old, conventional Wyatt roll for the front roll, and all improvements since Wyatt's time have been in the handling of the rear end.

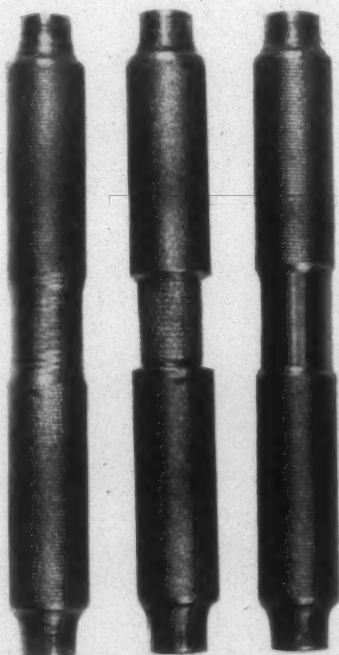
I do not know just how high we could run this draft. As you increase your draft the fibers spread out and become wiry and wild, so that they are widely separated as they come out at the front roll. That causes excessive clearer waste and fly. Some of the fibers in that clearer waste are quite long; they are not just linters. When the draft is much above 30 the fly and clearer waste increases to the point that it becomes very troublesome, which is true of all long draft systems without condensers. In order to avoid that we have to put in a condenser, but that space is so limited that up to today we have no condenser that we like to talk about. We have used the Casablanca condenser, which is the best we have found so far. When condensers were used the higher drafts were possible and produced excellent yarns. But the condenser is a nuisance; it drops out—it is continually falling out, and the first thing you know it is on the floor and somebody steps on it. So, until such a time as a foolproof condenser is developed, we recommend drafts only up to 30 or a little more. We feel that is well within the range of this system and that we should not go beyond it. When you stop to think of it, we used to draft ten; then we went up to 12 or 15. That was an increase of only 50 per cent, and that was the old long draft. When we get to a draft of 30 on the Shaw frame we are getting 200 per cent over the present long drafts. So we feel that we would be safer—that is, the whole industry would be safer—taking a step at a time instead of jumping in.

In my own experiments with various types of condensing I have found that drafts of from 40 to 45 produce excellent yarns. Now, this recommended installation I speak of drafts 35, instead of the 25 that the operator used to get with the same roving. When we went to these extreme drafts we can into trouble and had to work out an entirely new clearer system. Up to 20 it was all right, but when we went up above that it made a little bit more clearer waste

(Continued on Page 42)

DO YOUR TOP ROLLS GIVE YOU ANY TROUBLE?

Riverside and Dan River Mills, Danville, Va., upon close examination, found unnecessary friction between saddles and top rolls.



At the left is a picture of three top rolls. The one on the left is scarred and scratched, unmistakable evidence of friction and drag. The next roll is prepared for the deposit of special steel. The roll on the right has been built up with the special steel by our own method of metallizing.

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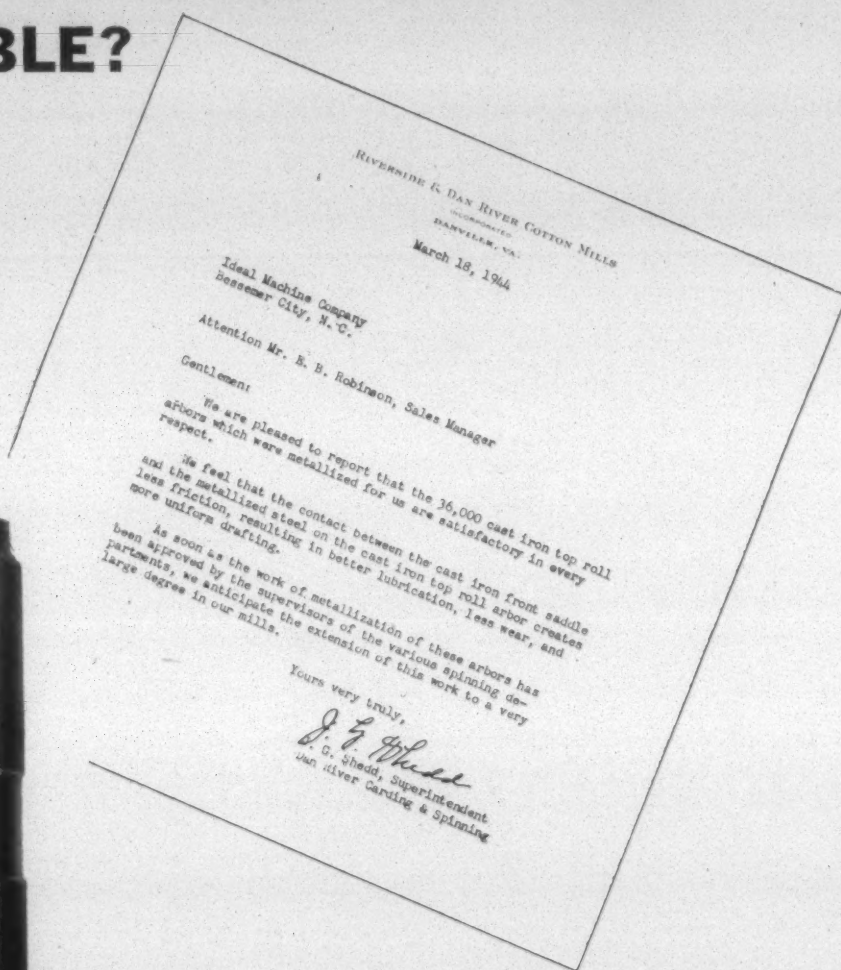
This reduces friction at the points of contact, which in turn reduces to a minimum the amount of drag on the cots. On long draft frames, where the top rolls are weighted more heavily, this improved bearing surface is especially beneficial and, as Mr Shedd points out, will result in more uniform drafting.

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PIONEERS IN TEXTILE METALLIZING — DEVELOPERS OF RCK FINISH FOR FLYERS



Operating Executives Discuss Rayon Staple

A DISCUSSION of the processing of rayon staple fiber was the second of two principal subjects considered by those present at the meeting of the Southern Textile Association's Piedmont division last month. Fletcher S. Culpepper of the textile research department, American Viscose Corp., Marcus Hook, Pa., introduced the topic, led the discussion of it and answered questions submitted by members. B. M. Bowen, superintendent of Salisbury (N. C.) Cotton Mills, presided. An abstract of the proceedings follows.

CHAIRMAN BOWEN: The next part of our program is a discussion on the processing of rayon staple fiber, which will be led by F. S. Culpepper of the American Viscose Corp. textile research department at Marcus Hook, Pa.

MR. CULPEPPER: Gentlemen, we have a list of questions that will explain a good deal about spun rayon. If Mr. Bowen will read out the first question, we will get started.

MR. BOWEN: The first question reads as follows: "Rayon staple is numbered in 'denier.' What does this mean?"

MR. CULPEPPER: The term "denier" is used to designate the size of filament yarn and also the size of the rayon staple fibers. It simply means the number of grams in a 9,000-meter length. In other words, 9,000 meters of one-denier will equal one gram in weight. As compared with cotton, normal American cotton runs about 1.4 or 1.5. Sea Island cotton runs around 1.1. Coarse American cotton and China cotton are 2.0 to 3.0 denier.

CHAIRMAN BOWEN: "What types of rayon staple are now made, and what are the approximate deniers of each? In what types of fabrics are they used?"

MR. CULPEPPER: Rayon staple is now made by both the viscose and the acetate processes, in both bright and dull lusters. The deniers on the viscose process start with 1.0 and go to $1\frac{1}{4}$, $1\frac{1}{2}$, 3 and $5\frac{1}{2}$. In a few cases the deniers have gone higher for certain types of blends, in our desire to produce rather harsh fabrics. In the acetate process the main denier types are 3.0 and $5\frac{1}{2}$, although some other types are made.

Starting with the viscose, the 1.0 and 1.25 deniers are considered the fine staples and are designed for fine fabrics, requiring yarns from 60/s up. They are also being used to some extent on coarser fabrics in which a great amount of softness is required, and also to produce extra yarn strength. They produce the strongest spun rayon yarns that can be made. The $1\frac{1}{2}$ denier is the type which has been used to the greatest extent in the past. It is used for poplins, challis, chambrays, etc.

Three-denier, in lengths from $1\frac{9}{16}$ up to and including 2.5 inches, is used in 100 per cent form and in blends with acetate, wool and other fibers for men's wear fabric

The 5.5-denier is not used much for spinning because it is difficult to spin yarns finer than 14/s. In some instances deniers as fine as 12 and even 18 have been blended in small percentages with other deniers to increase the crispness of the fabric.

DAVID CLARK, editor of TEXTILE BULLETIN: To what extent have you been able to spin cut nylon?

MR. GWALTNEY: I think I can answer that. We have spun quite a bit. After you get through the card it is the easiest stuff to spin you ever saw. It is hard to get through the cards. It is like super-Sea Island.

MR. CLARK: What about vinyon?

MR. GWALTNEY: We have not been able to spin that. It is difficult to keep the card from loading. We have been able to card that in blends. By the way, on the woolen system we have been able to card vinyon, but not on the cotton system to any extent.

QUESTION: Mr. Gwaltney, did you spin the nylon on the cotton system?

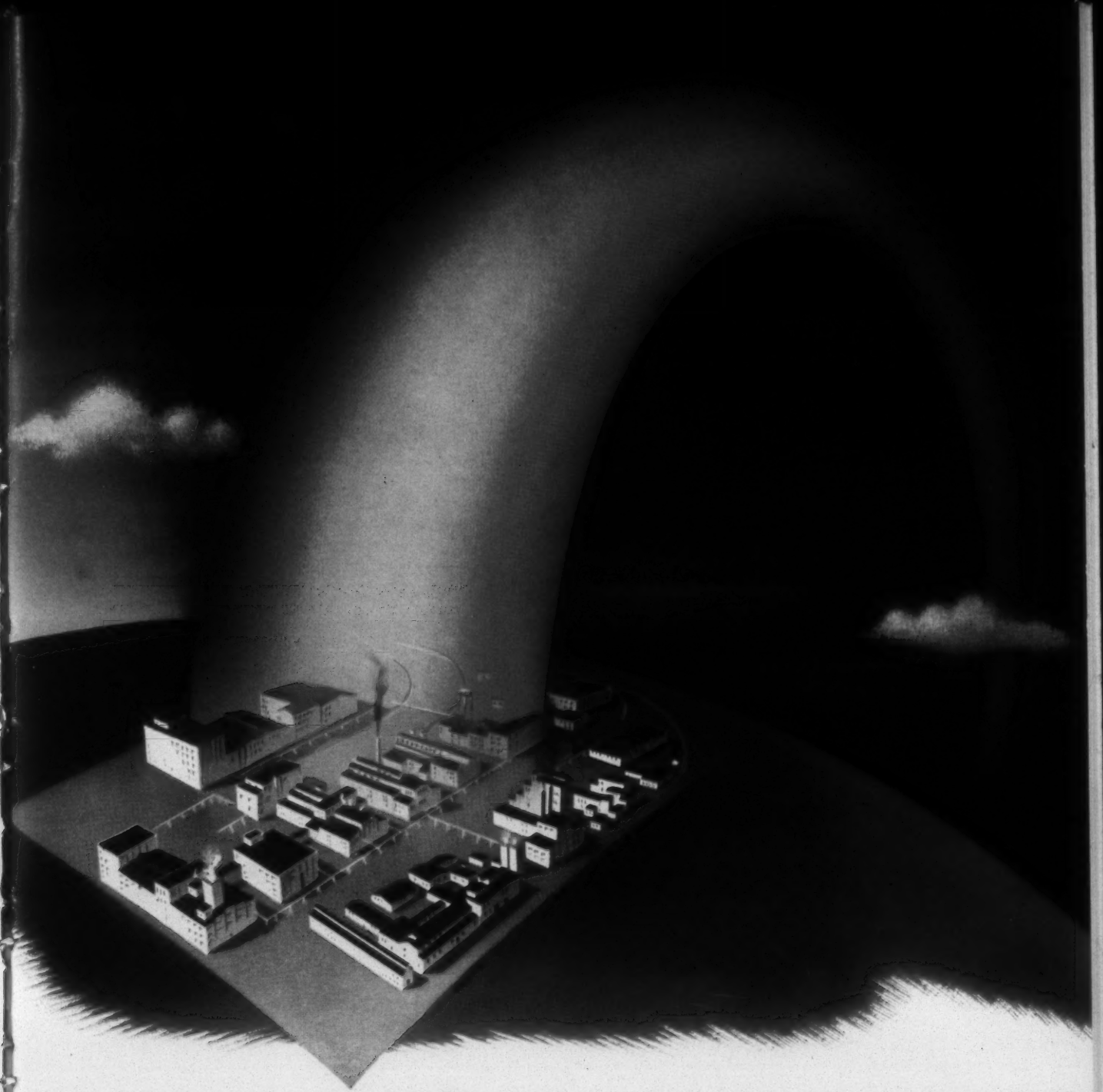
MR. GWALTNEY: Yes. It is the easiest stuff to spin you ever saw after you get it through the cards, but it is a headache while on the cards.

Lengths of Rayon Staple

CHAIRMAN BOWEN: "In what lengths are rayon staples made, and what are the general effects of lengths in processing?"

MR. CULPEPPER: In general, as to the effect of length on processing, it really varies with the denier. While a 3.0 denier $2\frac{1}{2}$ -inch staple can be and is being processed commercially, it would be impractical to try to process a staple $2\frac{1}{2}$ inches in length where the denier is as fine as 1.0 or even $1\frac{1}{4}$ or $1\frac{1}{2}$. This is due to excessive nep formation and the fact that no strength is gained.

As to the effect of length on strength, for 3.0 denier the optimum length for strength is around $2\frac{1}{2}$ to three inches. For 1.0 denier, we know that the optimum length for strength lies between 1.9 and $1\frac{7}{8}$. As you go up in length the likelihood of producing neps is increased. A 1.0 denier $1\frac{9}{16}$ -inch staple will produce cleaner yarn than $1\frac{7}{8}$ -inch, although not quite as strong. The longer lengths have to be carded a little slower, as you would expect. They require less twist at the fly frames and can be spun with slightly less twist. The staple breakage is higher on the longer lengths. Fabrics produced from the longer staple seem to have different characteristics from those produced from the shorter staple, in that the shorter staple produces a fabric that is fuller, due to the increased number of fiber ends. Fabrics produced from the longer staple seem to



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resemble the worsted type of fabric, due to the length of the ends of the fibers protruding in the fabric.

MR. CLARK: What about the varied length two-inch staple?

MR. CULPEPPER: You could say that 95 per cent of the staple is within $\frac{3}{16}$ of two inches, so you actually have a slight amount of variation in the length. It is not a true two-inch staple. I believe it was found in England that that type of staple produced better yarn or processed better than the other type. It is almost impossible to cut every fiber to exactly two inches. I do not believe the mechanics of the cutting machine allow for that. But slight varied lengths in fibers produce better yarn.

MR. GWALTNEY: What percentage of breakage do you find in your finished yarn? We find it is quite high.

MR. CULPEPPER: Actually, I do not have any test for breakage on the finished yarn; but normally, on the card sliver, we think anything around ten per cent breakage would be normal. I do not think you break much more. So I should say somewhere about ten or 12 per cent in the yarn.

MR. GWALTNEY: We found it higher than that.

CHAIRMAN BOWEN: "What are the best atmospheric conditions under which rayon staple can be processed?"

MR. CULPEPPER: As is generally known, rayon staple is a fiber that is much more susceptible to moisture changes than a good many other fibers. For this reason it is quite important that moisture conditions be under control and kept as uniform as possible.

In the first place, rayon staple is sold on a basis of 11 per cent regain. When the stock is received at the mill it is a good plan to have space, if possible, for a conditioning area. The bales should be opened and should be allowed to condition for a few hours before processing, at 55 to 60 per cent relative humidity and 78 to 80 degrees. Those are the ideal conditions. In our laboratory we maintain about 58 per cent relative humidity and 78 degrees temperature. Under those conditions we have very little trouble

with the lap splitting or with static. Excessive humidity tends to make the fibers sticky. I have seen one case where excessive humidity in the spinning room actually caused the production of some uneven yarn. On the other hand, dry conditions cause more fly and more static. The fibers are under less control when being drafted. So it is well to have as accurate control conditions as possible throughout the mill.

In the testing of spun rayon the conditions affect materially the strength that you get. We test our yarns at 58 per cent and 78 degrees, but, of course, it is the customary practice in most mills to have 65 per cent and probably 72 degrees since they run cotton, too. The main thing is to keep those conditions the same, day in and day out. Otherwise the strengths will vary all over the lot, and you cannot be sure of the results you are getting. Under normal conditions a skein of $1\frac{1}{2}$ denier $1\frac{3}{16}$ -inch 30/s broke at 68 pounds. That same yarn, after being bone-dried, taken from the oven and placed on the machine as quickly as possible, broke at 92 pounds. It increased from 68 to 92. So a small amount of moisture materially affected the strength. On normal staple 65 to 70 is considered a good break.

QUESTION: When you run 50 per cent of your production on cotton and 50 per cent on spun rayon, how do you balance your humidity?

MR. CULPEPPER: That is where the trouble comes in. I do not know just exactly what is the best condition for cotton, but I guess they run a little more than 55 per cent in the card room on cotton.

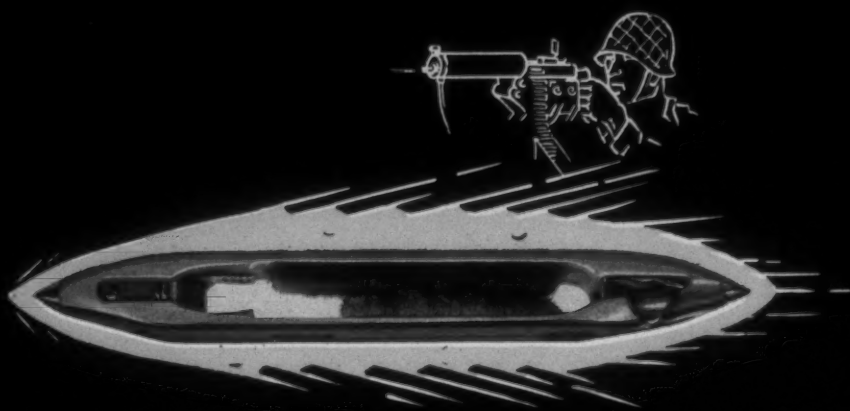
MR. GWALTNEY: Fifty-five would be ideal for cotton.

QUESTION: What do you find the best roll covering?

MR. CULPEPPER: On the fine deniers, such as 1.0 and $1\frac{1}{4}$, on the front roll I believe that leather rolls are preferred. On the normal deniers, $1\frac{1}{2}$ to 3.0, I know mills that are using all types. The metallic rolls run very well; there is very little lap-up, but they may damage the staple. I have conducted no test on metallic versus other types of rolls, but I think leather rolls on the front of the fine



A partial view of those present at the Southern Textile Association's Piedmont divisional meeting at Charlotte March 4. Fletcher S. Culpepper (standing), one of the main speakers, is shown at extreme right.



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deniers are preferred. On the other staples the synthetic rolls are quite satisfactory.

QUESTION: You say the regain in the staple you send out is 11 per cent. It gains 11 per cent moisture as it is shipped?

MR. CULPEPPER: That is the moisture regain.

QUESTION: What would the moisture content drop to if it is stored in bale form?

MR. CULPEPPER: It would have very little chance to drop much. It would probably drop down to eight or nine per cent. That 11 per cent regain is obtained at approximately 58 per cent, so I do not have a definite figure for the amount it would lose. It would take a long time to lose very much if lying in the bale, I should think. Anyhow, I think it would be around eight or nine per cent.

QUESTION: In the card room, where the stock is more open than in the bale, what rate of drop would you expect, at 40?

MR. CULPEPPER: I think it would go down to as low as eight per cent over the week-end.

CHAIRMAN BOWEN: "Describe the various tinting methods and the complications of each."

MR. CULPEPPER: To my knowledge there are probably four methods of tinting. One method, the so-called Borne-Scrymser method, consists of spraying the tint on the stock in the hopper feeder. Either oil tints or water tints are used. In another method the tint is applied inside the beater chamber. Another method is simply to dye a portion of the stock and blend that with the natural staple down to the shade desired. I have also seen the tint applied at the card. Just before it is condensed a small applicator drops a portion of the tint. That tends to have a streaky effect and is not as desirable as the other methods.

The principal thing in tinting is to be cautious about the amount of tint applied. That is especially true on oil tints, because an excessive amount of oil will cause undue loading at the card, both on the licker-in and the cylinder, and will cause trouble with lap-ups.

Comparing water tints with oil tints, I believe water tints are said to be fast to light. On the other hand, when sprayed on they do not spread quite as rapidly. Which is the better type I do not know. The important thing is to be sure the tint is fugitive and to be sure it is fugitive on the type of fiber on which you are using it. Also, the amount put on should be kept as low as possible, say somewhere around one-half of one per cent.

Purposes and Methods of Blending

CHAIRMAN BOWEN: "What are the purposes of blending, and what are several methods of blending?"

MR. CULPEPPER: The purpose of blending is to create a variety of fabrics, using any of the fibers known today and making blends such as acetate and viscose, viscose and wool, acetate and wool, rayon and cotton. All of these blends, or a combination of all of them, will produce a range of fabrics that makes a fiber more versatile, we might say, than any other thing we do.

As to methods of blending there are quite a few good ones. The old sandwich method is still a good method. That consists simply of laying down a layer of each fiber and feed from the cross section of the stack. Some mills still prefer to use the hopper method, operating several hoppers and feeding directly to the picker. Some fibers are blended on the drawing frames. This method is all right when the fibers have the same dyeing characteristics, particularly cotton and viscose staple. On the other hand, cotton and acetate would be likely to be streaked and uneven. With staples such as viscose and acetate, which are the same types of fiber with regard to cleanliness, it is advisable to blend them before picking. But with cotton, where you have to do a good deal of cleaning, it is better not to blend before picking. Blending on the drawing frames is perhaps the best way. It is better, however, to investigate the different methods. It all depends on the results you have to have.

Picker and Card Changes

CHAIRMAN BOWEN: "What are the necessary changes in pickers and cards in order to get the best results?"

MR. CULPEPPER: The picking of rayon staple is the subject of a lot of controversy. Numerous methods are used. We prefer the two-section picker. In other words, we prefer not to use over two beaters on ordinary rayon staple. The main point I want to make is that we find that two Kirschner beaters, operating at relatively low speeds, give us good results with very little fiber damage. When you change from cotton to rayon, reduce the speed of the feed. There is a tendency for rayon to feed heavier than cotton. Some mills have put a sheet of metal into the beater chamber. That is all right, I think, to some extent, if you perforate it. Otherwise, if it is completely stopped up, you do not have as good a draft. Many mills do not put in the sheet metal at all and obtain good results.

The fan speeds vary. They are generally higher than for cotton, since the fiber is denser. The pressure on the calendar rolls, particularly on fine deniers, should be watched, in order to prevent crushing of fibers that may come through unopened.

The carding of rayon staple is similar to that of cotton. Very few changes have to be made in the settings, with the exception of the licker-in settings. The licker-in speeds we prefer to run slower than on cotton. On fine deniers it is sometimes essential to run at lower licker-in speeds to prevent excessive loading.

The card production is another point of controversy. I contend that you can card a 3.0 denier or even 1½ denier at normal speeds of around 12 to 14 pounds per hour on a flat top card. However, on 1¼ denier or 1.0 denier, if you are making very fine yarns it is necessary to cut your speed down to less than six, sometimes even to four pounds per hour.

There has been some trouble in the past with excessive web sagging. That can be decreased by increasing the calendar roll speed. This trouble is much more prevalent with the coarser staples. Two and one-half denier is the one that gives most trouble in that respect.

MR. GWALTNEY: I should like to ask a question on that.

You find, do you not, that with a stiff, coarse fiber you get much more production through the card than with the fine, silky fiber?

MR. CULPEPPER: That is right.

MR. GWALTNEY: I think the difference is quite marked, is it not? The difference in production that you can get on those two staples is quite marked. You can perhaps get three or four times as much per hour, with a clear web, on the coarser fiber than on the finer.

MR. CULPEPPER: We have to consider fiber separation. You cannot say you would get three or four times the production, because it would not run as well. If it were running too fast you would have difficulty with the web sagging, and things like that. But it is true that the coarser deniers will separate much more easily than the finer and require less time in the carding.

MR. GWALTNEY: We had a question—with a mixture of 3.0 denier and 5½ denier, how much production should be put through the card. I had to take the unpopular side of the argument and say that 30 pounds an hour card production was too high.

MR. CULPEPPER: I have not seen any at 30 pounds an hour on the flat-top card. I do not think the flat-top card should be run over about 12 or 13 pounds an hour on rayon staple. I understand that the roll-top cards are running in the range of from 20 to 25 pounds an hour and producing satisfactory results.

QUESTION: Have you found the roller-top card is better for any certain denier or any certain length?

MR. CULPEPPER: I believe the roller-top card in its present state of development is better for handling staples of 3.0 denier and up. I believe the best use to this date is for 3.0 denier and coarser and for wool-rayon blends.

CHAIRMAN BOWEN: "What is the essential difference in drawing rayon staple, as compared to cotton, and what is the best type top roll?"

MR. CULPEPPER: The tendency of the staple to lick is more pronounced, possibly, on rayon than on cotton. For that reason the large diameter rolls are of definite benefit. The setting we have arrived at is about ¼-inch from the front to the second and increase to ⅜ from second to third and ½-inch from third to fourth. Normal speeds as used for cotton are satisfactory. One of the principal things is to have an adequate cleaning schedule, to prevent waste, etc., going back into the work. I do not think there is anything very difficult about the drawing process, as compared with cotton, except that possibly that little wider settings should be used.

MR. GWALTNEY: The statement has been made that no commercial knit yarn has been made out of three-inch and 1½ denier two-inch staple nep-free. You can have nep-free fiber. Don't you actually put neps in on the drafting?

MR. CULPEPPER: I have seen it happen that the amount of neps increased in the drafting. It may be that they are small on the card and tangle worse on the drafting.

CHAIRMAN BOWEN: "What are the essential changes on the fly frames?"

(Continued on Page 40)

Master Mechanics and Gaston County Meetings Set

Problems relative to maintenance and repairs in textile plants will be featured Thursday, March 6, when the Master Mechanics division of the Southern Textile Association gathers at Charlotte, N. C. The meeting will begin at 10 a. m. in one of the large parlors of the Charlotte Hotel, and will be under the direction of R. F. Nichols, Newberry, S. C., chairman of the division. The discussion will be devoted to two topics—metallizing, a process of rebuilding worn metal surfaces; and problems of electrical maintenance in mills.

E. M. Kay, manager of the Carolinas branch of Metallizing Co. of America in Charlotte, will give an explanation of the principles and practical uses of metallizing. He will discuss the advantages of this process over other methods of maintenance and repair. Mr. Kay will answer a number of questions relative to this process which have been submitted by various members of the division. The questions are: (1) What is the widest use for metallizing in the textile field?; (2) How many kinds of metals can be sprayed?; (3) What experience is necessary in order to obtain successful metallizing results considering the present-day labor supply problems?; (4) What

applications are not adaptable to the metallizing process?; (5) Have many mills in the Carolinas begun to do their own metallizing work?; and (6) Will metallizing in textile mills be practical after the war?

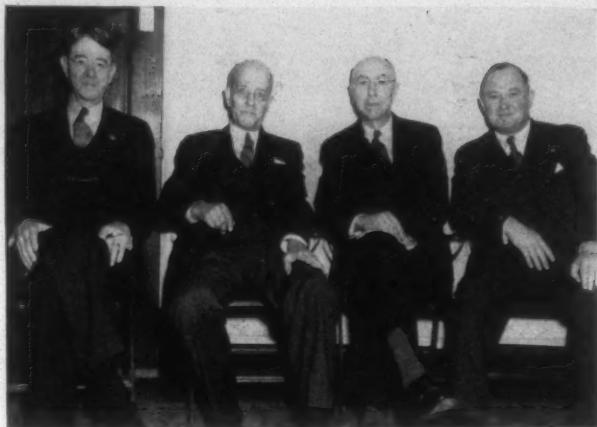
The discussion of electrical problems will be conducted by James T. Meadows of Southern Electric Service Co., Charlotte. Questions Mr. Meadows will answer are: (1) How may motor coils be cut out in an emergency?; (2) How many transformer connections should be made for lighting or other purposes?; (3) How many instruments should be used in checking motor loads? (the Tong Test Ammeter will be displayed); (4) What is the effect of grounds, and how may they be located?; and (5) How are magnetic electric controls operated and maintained?

John T. Wigington of Clemson, S. C., director of the division of technical service, Cotton-Textile Institute, Inc., will be the chief speaker at a meeting of the association's Gaston County division at Gastonia, N. C., Friday night, April 21. Mr. Wigington, who is also secretary of the Industrial Fiber Society, will speak on current research activities in the textile industry. H. Gilmer Winget of Gastonia is chairman of this division.

20th Anniversary is Celebrated

FOUNDING of the Piedmont section of the American Association of Textile Chemists and Colorists 20 years ago was celebrated March 25 at Greenville, S. C., by the more than 200 persons connected with the textile industry who attended the group's spring session. The meeting, held at the Poinsett Hotel, featured afternoon technical discussions as well as the evening anniversary observance program.

William D. Appel, national president of the association and chief of the textile section of the National Bureau of Standards, made the principal address at the banquet on the relation of the bureau to the textile industry. Others who spoke included Leonard S. Little of the organic chemicals department of E. I. du Pont de Nemours & Co., and William H. Cady of Providence, R. I., the latter a past national chairman. Henry Dixon, chairman of the group, presided. H. R. Mathewson, superintendent of Union Bleachery at Greenville, led the forum on piece dyeing, and R. H. Smith, superintendent of Melrose Hosiery Mills at High



National presidents of the A.A.T.C.C. (left to right): P. J. Wood, W. H. Cady, W. D. Appel, the current president, and T. R. Smith.

tested each month. "The importance attached by the bureau to performance as opposed to composition of textiles is reflected in instruments to evaluate characteristics related to performance," he said. "However, the bureau had developed methods of analysis for fiber composition and chemical methods for evaluating textiles."

He added that the bureau is attempting to co-ordinate the efforts to standardize tests for mildew resistance of textiles and methods for the accelerated weathering of textiles which are in progress in a number of laboratories, both government and private. "With a small staff, limited facilities and a modest expenditure of public funds for textile work, the bureau has been able to make a sizable contribution to the textile industry," he concluded.

Present officials of the Piedmont section honored past chairmen and those A. A. T. C. C. members who were present when the group was organized and chartered at Greenville in 1924. Sixteen of the 20 past chairmen were present. H. A. Barnes, Chester L. Eddy, C. S. Doggett and Paul F. Haddock, the latter two now dead, were the only past chairmen not in attendance. Those present for the 20th anniversary program who also attended the inaugural meeting in Greenville included R. W. Arrington, Malcolm Mackenzie, John David Hunter, N. R. Vieira, W. D. Shields and A. R. Thompson, Jr.



Officers of Piedmont section (left to right): Wyss L. Barker, treasurer; Sidney M. Cone, vice-chairman; Henry B. Dixon, chairman; Leland G. Atkins, secretary; and Hyman H. Field, member of sectional committee.

Point, N. C., conducted the discussion on the dyeing and finishing of hosiery.

Mr. Appel outlined the operations of the bureau of standards and stated that 1,500 samples of textiles are



First group (left to right): T. A. Marlowe, Harold Troutman of Statesville Cotton Mills, Shelton Miller of Phoenix Mills, Inc., M. L. Brackett and L. H. Polk of Highland Park Mfg. Co. Second group (left to right): D. C. Newman of E. I. du Pont de Nemours & Co., Inc., W. H. Brinkley of E. F. Houghton & Co., R. D. Sloan and N. R. Vieira of DuPont. Third group (left to right): H. W. Rose of American Cyanamid & Chemical Corp., Frank Patterson of Cannon Mills, and John D. Hunter of American Cyanamid.

by Piedmont A.A.T.C.C. Section



First group (left to right): A. S. Cooley and George R. Howard of American Aniline Products, Inc., S. P. Schoyer of E. F. Houghton & Co., C. H. Morris of Wiscasset Mills Co., and Charles B. Ordway of American Aniline. Second group (beginning at extreme left, in clockwise order): E. R. Swing of Cannon Mills, Carroll A. Reddic, Jr., of Hercules Powder Co., Miss Ida Constable, W. W. Stapler of Hercules, Mrs. Julian Harmon of Cannon Mills, H. A. Blum of Hercules, Charles A. Mies of Renfrew Bleachery, Mrs. E. R. Swing, Henry Constable of DuPont, and Mrs. Constable. Third group (left to right): Dyer Moss, A. Henry Gaede of Laurel Soap Mfg. Co., Hobart Souther of Proximity Print Works, and Roy Beauregard of Fairforest Finishing Co.



First group (left to right): John Tarvin of S. C. Johnson Co., Tommy Dwyer and Mike Filipelli of Burlington Dyeing & Finish-insh Co., and C. T. Anderson of Ciba Co. Next, Max Einstein of Standard Chemical Products Co. Next, Moody Burt of Nova Chemical Co. Last group (beginning at left foreground, in clockwise order): W. R. Tornquist of Clearwater Mfg. Co., Walter Murray of Warwick Chemical Co., A. Stonstrom of Pacific Mills, C. A. Funke of Nova Chemical Co., A. N. Henschel of Clearwater Mfg. Co., T. Larsen of Carbic Color & Chemical Co., William Jones of Clearwater Mfg. Co., Henry Papini of Warwick Chemical Co., and N. Judson Miller of Quaker Chemical Products Co.



Past chairmen of the Piedmont section (left to right, seated): A. R. Thompson, Jr., R. M. Mitchell, H. M. Chase, Brown Mahon, Leonard S. Little, C. Norris Rabold and T. W. Church, Jr.; (standing): S. L. Hayes, John L. Crist, George P. Feindel, T. R. Smith, R. E. Rupp, A. Henry Gaede, H. E. Keiffer, Jr., and L. M. Boyd.

MILL NEWS

TALLADEGA, ALA.—C. H. Young, referee in bankruptcy, has approved the sale of Samoset Cotton Mills Corp. to Wehadkee Yarn Mills of West Point, Ga. The price was listed as \$380,000 and the bid was one of six submitted at a creditors' meeting. Some dissatisfaction has been expressed concerning the proposed sale.

PATTERSON, N. C.—Patterson Mills has been sold to interests in New York City and Belmont, N. C., known as Yadkin Mills, Inc., and will be operated as a unit of the new concern. Harry McIntyre, who has operated the plant since 1916, has been succeeded as manager by Wade Stowe. George Stowe is listed as president and treasurer. Mr. McIntyre will continue to operate the mill store, which was not sold.

ELIZABETHTOWN, TENN.—North American Rayon Co. has awarded a contract to Hughes Foulkrod Co., Philadelphia, Pa., for new additions to the company's plant. The engineers for the project are Moran, Proctor, Freeman & Mueser of New York. The additions will comprise several buildings to be used in high-tenacity yarn manufacture for tire cord. Having a priority rating, the work is now being inaugurated. The cost of the building program and machinery is estimated at \$1,000,000.

Conversion to New Fabric Urged

In an effort to procure as quickly as possible a large quantity of water-repellent cotton fabrics, the Quartermaster Corps has asked contractors now making six-ounce twill (shirting) to convert over as many of their looms as possible to the weaving of a newly-developed cotton fabric which uses the same yarns as the twill. The new fabric is a high density weave. It will be used mainly in the manufacture of water-repellent covers for the recently standardized sleeping bag made from woolen blanket material.

In requesting weavers to convert their looms to the new fabric, the Quartermaster Corps offered suggestions for three different specifications of cloth which would be acceptable. These specifications permit the use of yarns now being used in making the six-ounce shirting, as well as some finer yarns, if manufacturers should find their use more desirable. Because very few mills have had any experience with the new fabrics (except those which have been working with the Quartermaster Corps in its development) the corps asked the mills to write in the week after receiving the request telling how much yardage could be changed over by June 30, how much of the six-ounce twill could be delivered in that period on present contracts, and how much of the new fabric could be delivered monthly thereafter under new contracts.

COLUMBUS, GA.—Construction of a large addition to the Meritas Mill property of Bibb Mfg. Co. is under way. The new mill will cover a tract of approximately 55 acres and will be equipped for the production of rayon tire cord, with facilities for about 125,000 pounds weekly. The company is installing machinery as the War Production Board has approved an expenditure of \$1,259,168 for equipment.

CHERRYVILLE, N. C.—Carlton Yarn Mills, Inc., Howell Mfg. Co. and Nuway Spinning Co., Inc., have joined in the publication of a monthly paper which is mailed to the men and women who have received leaves of absence from one of the three plants in order to join a branch of the armed forces. The title of this monthly newsletter is *Car-Nu-How*, and it is edited by Mrs. Victor Stroup, social worker for the three plants.

LITTLE ROCK, ARK.—A fire believed to have started from an overheated motor damaged machinery and destroyed part of the cotton in the Little Rock Textile Co. plant recently.

BREVARD, N. C.—Pisgah Mills, Inc., has been awarded a trophy by the Western North Carolina Safety Council for having no lost-time accidents over a period of one year. The plant employs some 185 persons, with production concentrated on thread for the armed services.

NINETY-SIX, S. C.—Ninety-Six Cotton Mill is now publishing a regular news-letter which is sent to all former employees now in uniform. The latest issue of the paper, which is sponsored by the Service Letter Club, contains a number of notes about activities in the plant and among its workers.

WADESBORO, N. C.—Wadesboro Yarn Co., Inc., has received a state charter to engage in a general manufacturing business. Authorized capital stock is 600 shares with no par value. Subscribed stock amounts to \$15, by Sheldon M. Roper, A. J. Owens, Jr., and M. M. Rudisill, all of Lincolnton, N. C.

Gardner and Murchison To Speak

In addition to Donald Nelson, chairman of the War Production Board, members of the American Cotton Manufacturers Association will hear several other well-known speakers during their annual meeting April 12 at the Biltmore Hotel, Atlanta, Ga. These include O. Max Gardner, former governor of North Carolina and a textile industry executive himself; and Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, Inc. Hugh Comer of Sylacauga, Ala., president of the association, will make his address at the luncheon session. A large attendance at the one-day meeting has been forecast by W. M. McLaurine, secretary-treasurer of the association.

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PERSONAL NEWS

Carl M. Rudisill, prominent textile executive of Cherryville, N. C., who suffered a stroke of paralysis several weeks ago, is reported to be greatly improved.

Jollie Hudson has been promoted to assistant overseer of carding and spinning at the Haleyville plant of Alabama Mills, Inc. W. M. Woodham has been promoted to assistant overseer of weaving.



Winn W. Chase

Winn W. Chase has resigned as executive editor of *Textile World* to become director of technical publicity and market research for Aridye Corp., Fair Lawn, N. J. He will supervise these activities of the company, including the investigation of markets for new products and the study of the post-war needs of those branches of the textile industry served by Aridye Corp. and associated companies.

Charles H. Haase, who was superintendent of Richmond, Va., plant of E. I. du Pont de Nemours & Co., before entering the Army Air Forces, has been promoted to the rank of lieutenant-colonel. He is serving as director of the Air Service School at Robbins Field, Macon, Ga.

W. S. Terrell, vice-president of Terrell Machine Co., Charlotte, N. C., has been appointed to membership on the War Production Board's bobbin and spool industry advisory committee.

L. P. Haas has resigned as second hand of carding at Rhodhiss (N. C.) Mfg. Co. to be overseer of spinning at the Aldred Mill of Granite Falls (N. C.) Mfg. Co.

B. G. Payton, formerly of Douglasville, Ga., has become overseer of spinning, spooling and warping at the Valley Falls Mill of Martel Mills, Spartanburg, S. C.

R. C. Anderson, president and treasurer of Carolina Process Co., Mount Holly, N. C., has been appointed a member of the committee on veterans employment problems of the National Association of Manufacturers.

Harold R. Wing has been elected a director of Crompton & Knowles Loom Works, Worcester, Mass. Mr. Wing, who is supply sales manager, has been with the company since 1917. He fills a board vacancy caused by the retirement of Fred J. Bowen. Other officials of the firm were re-elected at the recent stockholders' meeting.

Paul Gillespie, an official of Mills Mill at Woodruff, S. C., has been elected president of the Woodruff Rotary Club.

R. P. Harris of Pelzer, S. C., is now second hand of carding at Clinton (S. C.) Cotton Mills. Otis M. Jefferson, formerly of Greenwood, S. C., is now assistant cloth room overseer in the same plant.

Henry H. Bitler and Dr. Frank H. Reichel have been elected directors of American Viscose Corp. Mr. Bitler is manager of acetate rayon and vinyon production for the company, and has been identified with it since 1920. From 1930 to 1940 he was manager of the corporation's plant at Meadville, Pa., at which acetate rayon and vinyon are produced. Dr. Reichel has been associated with Sylvania Industrial Corp. of Fredericksburg, Va., since its organization in 1929 and has been its president since 1938.

J. C. Sularin is now spinning room second hand at the Cordova, Ga., plant of Nashua Mfg. Co.

Emil V. Wilson has joined the field staff of Steel Heddle Mfg. Co. as an engineer with headquarters at the company's Atlanta, Ga., office. He is a textile engineer with practical mill experience and is well-known throughout the South.

L. G. Sjostrom, superintendent of Virginia Woolen Co., Winchester, Va., has been elected vice-president of the Winchester Rotary Club.

J. Frank Dunn has resigned as overseer of carding for Pomona Mfg. Co., Greensboro, N. C., after 15 years of service.

Curtis E. Bowne, director of market and product research of American Thread Co., has been appointed chief of the cotton thread unit of the War Production Board. Frederick Wetzell, cotton yarn broker and representative of a number of mills, has been named a consultant in the WPB combed yarn unit.

William B. Moore, on leave as vice-president of Wade Mfg. Co., Wadesboro, N. C., has been promoted to the rank of lieutenant-colonel at the Charlotte (N. C.) Quartermaster Depot, where he is director of supply. He has been stationed at the depot since June, 1942.

Vernon C. Hawley, on leave from Wellington Sears Co., New York City, has been promoted to the rank of major at Olmsted Field, Middletown, Pa., where he is with the base quartermaster office.

Harold E. Dunderman of Neuss, Hesselein & Co., New York City, has been appointed chief of the export section of the War Production Board's cotton fabrics branch. Kennedy C. Sparnon of J. P. Stevens & Co., has been named chief of the drill and twill unit, gray goods section, cotton fabrics branch.

C. Callaway, Jr., treasurer of the Crystal Springs Bleachery, Chickamauga, Ga., and Lewis M. Heflin, secretary of the Cone Export & Commission Co., New York City, has been elected to membership in the Controllers Institute of America. The institute is a technical and professional organization of controllers devoted to improvement of controllership procedure.

W. A. Laney, assistant overseer of weaving for Erlanger Mills, Inc., Lexington, N. C., for the past three years, is now superintendent of weaving at Esmond-Virginia, Inc., Bluefield, W. Va. The new overseer of weaving at Esmond-Virginia, Inc., is J. O. Turner, who was also an assistant overseer at Erlanger Mills.

Lieut. Oliver D. Landis, U.S.N.R., who has been stationed this winter at the Naval Air Gunnery School at Hollywood, Fla., has been transferred to the naval air station at Oak Harbor, Whidbey Island, Wash. Prior to entering the service Lieutenant Landis was Carolinas representative for Graton & Knight.

Sidney H. Ballenger of the Walhalla, S. C., plant of Victor-Monaghan Co., has been elected president of the Walhalla Rotary Club, and will take office July 1.

Robert B. Steere has become sales manager for North American Rayon Corp., succeeding Arthur L. Erlanger, who has resigned after many years in the industry.



Louis S. Fryer

Louis S. Fryer, production manager of Industrial Rayon Corp. for the past four years, has been named vice-president and production manager. A native of New York City and a graduate of New York University in chemical engineering, Mr. Fryer is a member of the American Institute of Chemical Engineers and the American Association for the Advancement of Science. He joined Industrial Rayon in 1931, following nine years spent in research and development work with other rayon producers and consulting engineers.

C. L. Allen, formerly overseer of spinning and carding at the Elm City plant of Callaway Mills, LaGrange, Ga., is now a salesman for W. A. Hunt Mfg. Co. of LaGrange.

Soren H. Mortensen, chief electrical engineer for Allis-Chalmers Mfg. Co., Milwaukee, Wis., was recently awarded an honorary doctor of engineering degree by Illinois Institute of Technology at Chicago "for distinguished leadership in the development of alternating current machinery."

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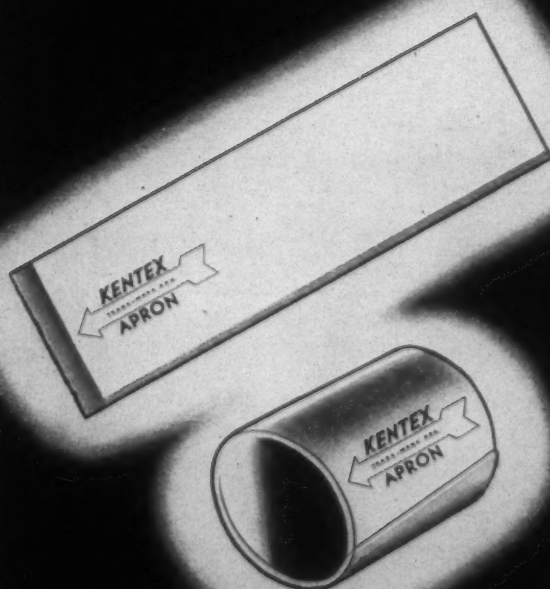
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Offices: 218 W. Morehead St., Charlotte, N. C.
Eastern Address: P. O. Box 133, Providence, R. I.

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The Davis Bible of Stabilization

Chairman William H. Davis of the War Labor Board has issued a "Bible Stabilization" which he says collects the controlling provisions of the stabilization act and executive orders into a relatively brief code, with a condensed statement of how these rules work out. The board general principles governing wage adjustments are set forth under four points:

"1. The 'Little Steel' formula stabilized the general level of wages by placing a definite limitation upon the grant to groups of workers of general rate increases. This limit is 15 per cent above their wage rates on Jan. 1, 1941. Within this limit increases may be made to selective groups of employees whose wages lagged behind in the race between prices and wages which began about Jan. 1, 1941.

"2. To correct those inequities which result from wages insufficient to maintain a decent standard of living, the wage policy as now defined permits employers to increase minimum hourly wage rates up to 40 cents without seeking the approval of the War Labor Board, and the regional war labor boards are authorized to approve voluntary applications by employers to increase minimum hourly rates up to 50 cents.

"3. Within the general level of wages, established wage differentials which are normal to American industry are stabilized by the bracket system. An existing rate cannot be increased if it lies within the range of sound and tested rates prevailing for that occupation in the labor market area. Gross inequities due to wage rates below this range may be corrected by bringing the rates up to, but not above the mini-

mum of the bracket, except in rare and unusual cases in which the critical needs of war production require the setting of a wage at some point above the minimum of the going wage bracket.

"4. Inequities among the wages paid within a plant may be corrected only subject to the limitation that such adjustments must not increase the level of production costs appreciably or furnish the basis either to increase prices or to resist otherwise justifiable reductions in prices."

Chairman Davis is authority for the statement that these are basic rules, each with its own clearly defined stabilizing limit, frame the area within which wage adjustments may be made to avoid gross inequities and aid in the prosecution of the war without lifting the general level of wages. He asserts that by this policy the government has definitely prevented that upward spiraling of wage rates which would otherwise have resulted from competitive bidding for scarce labor in a tight labor market.

Progress in Textile School Plans

The Textile School of North Carolina State College is taking advantage of the willingness of the North Carolina Textile Foundation, Inc., to supplement salaries when outstanding teachers can be found and is rapidly strengthening its staff.

Those added to the faculty up to the present time have been:

Malcolm E. Campbell

Dean

Mr. Campbell graduated at Lowell Textile School and while teaching at Clemson College received another degree there. After working with mills in New Bedford and with the cotton department of the Firestone Tire & Rubber Co. he was for a number of years engaged in research work for the government and specialized in the spinning value of textile fibers. He was research manager of the Textile Research Institute, Inc., of New York at the time of his employment.

G. H. Dunlap

Practical Research

Mr. Dunlap was a member of the faculty at Clemson College for several years. He was engaged in practical research for the Southern Textile Association and the Arkwrights and did notable work on the speeds of card cylinders. He was later employed by the Cotton Textile Institute to assist mills with research work. He has a similar assignment at N. C. State College.

Elliott B. Grover

Yarn Manufacturing

Mr. Grover is a graduate of M. I. T., where he specialized in mechanical engineering. After graduation he entered textile manufacturing and specialized in production phases and research of an applied nature. He holds several patents for textile devices. For 16 years he was with the Manville-Jenckes Corp. of Manville, R. I., and at the time of joining the staff of N. C. State College was superintendent of the yarn division of that company.

Joseph R. Bentert

Knitting

A native of Detroit, Mich., and a graduate of Marquette University, Mr. Bentert had been for 20 years with the Holeproof Hosiery Co. of Canada and had for some time been superintendent of all of their plants, both seamless and full fashioned, but had devoted most of his time to the seamless hosiery division.

He has had experience in training of fixers, operators and other mill employees, and has handled such items as rate setting, yarn selection, styling, sales budgets, yarn computations, production planning, yarn controls, finished stock controls, cost systems, employment methods, humidification, lighting, etc. He has made thorough studies of seamless machines for women's nylon hosiery, new equipment selection and design, plant maintenance, and was instrumental in the installation of a machine shop at London, Canada, which was used to build special attachments. Upon two occasions he has done knitting research in Europe. He will not report until July 1st.

This is the first announcement of the employment of Mr. Bentert. It should be of interest not only

to knitters but those mills who sell yarns to knitters because any assistance he can give to knitting mills will make them better customers for yarns.

It is anticipated that at an early date a man who has had special experience in blending and spinning synthetic fibers will be employed as head of the rayon manufacturing department. The employment of a librarian for the textile library, which is to be established, will be announced at an early date.

Later, but probably not until the close of the war, men will be employed to teach textile marketing and economics and to train men for personnel management.

On April 1st the North Carolina Textile Foundation, Inc., had received \$499,975.00, which was just \$25 short of half a million dollars, and it is reasonably certain that it will secure in excess of \$700,000, which will insure that the organizers can carry their program, of supporting textile education, for a period of 20 years.

While the Textile School at N. C. State College has taken the lead in strengthening its faculty, it is anticipated that equally strong additions will soon be made at Clemson College and Georgia Tech.

Another Lost Effort

President Franklin D. Roosevelt has failed in his most recent effort to destroy the principal of states rights.

The most basic of all states rights is the right of a state to regulate and supervise the voting of its citizens and if the control of voting could have been transferred to the Federal Government, as was attempted through the Federal Soldiers Vote Bill, a step forward would have been made in the destruction of states rights.

There are very few soldiers who will not have a chance to vote under the bill which President Roosevelt reluctantly permitted to become a law.

The bill which President Roosevelt designated as "a fraud" is far less a fraud than the one he backed.

North Carolina adopted, in February, 1943, a law which assured every North Carolina soldier a vote in the election this fall and Georgia enacted a similar law recently. There are very few states which will not protect the voting rights of their soldiers.

Casualties at Home

A report on American war casualties to March 15, 1944, sets the total at 173,239 for both the Army and the Navy including the Marines.

However, these statistics include wounded, missing and prisoners and a breakdown shows that the total killed are listed as 32,657.

We have no desire to minimize the seriousness of the death of 32,657 men or the distress which has come to their families, but when we compare the death of this number in 27 months of war with other records which seem to create no excitement whatever, we can see that death in battle is being given an exclusive spotlighted position.

A total of 32,657 men killed in war service during the 27 months since Pearl Harbor is an average of 14,500 per year.

Homicide and suicide in the United States has accounted for the deaths of about 26,000 annually and syphilis takes about 19,000.

Deaths from automotive vehicle accidents in the United States in 1936 are listed by the World Almanac as 38,089 and as 39,643 in 1937. The average of recent years has been above 37,000. A large percentage of the deaths were in the same age brackets as men in the armed forces.

Deaths from cancer now average 163,000 per annum, while heart disease takes several times that number.

Not taking into consideration heart diseases, tuberculosis and many things which affect the aged, the causes of the deaths of citizens of the United States in each year are running about as follows:

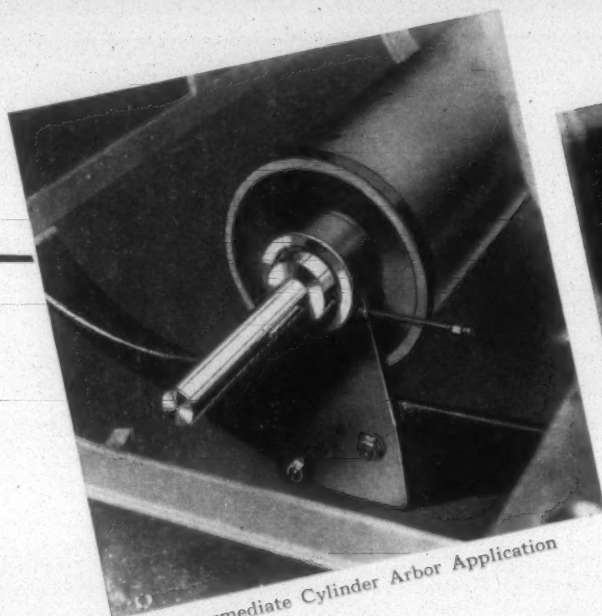
Killed in war.....	14,500
Syphilis	19,000
Homicide and suicide.....	26,000
Motor vehicle injuries.....	37,000
Accidents	100,000
Cancer	163,000

If we add to those killed in war, those missing and so badly injured as to be incapacitated for life, we will still be below those who die each year in the United States by reason of homicide and suicide or even by syphilis.

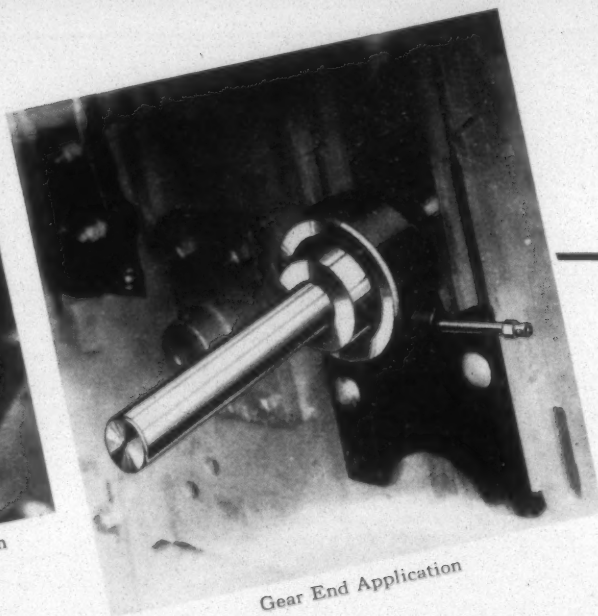
Those killed each year in the war to date are not half as many as die by reason of motor vehicle accidents, and it is estimated that had there been no war, and no curtailment of the building and sale of automobiles, the annual death rate from motor vehicle accidents would now be above 50,000, and it may be that not many more are, up to the present time, being killed in war than would have been the increase in those killed in motor vehicle accidents.

We, of course, expect a very great increase in war casualties during the remainder of 1944 and during 1945, if the war continues that long, and realize that the above statistics will be of no consolation to those who lose a son or husband or brother in battle, but they do show that, while deeply concerned about war deaths, we are very careless and very much unconcerned about those forces which each year, in peace or in war, take the lives of a very much larger number of our citizens.

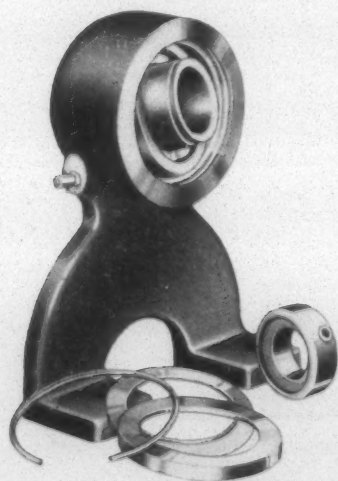
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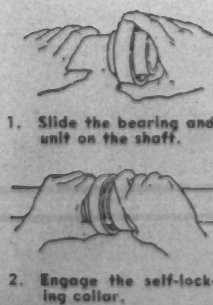
Gear End Application



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1. Slide the bearing and unit on the shaft.

3 SIMPLE STEPS TO MOUNT THE BEARING UNIT ON THE SHAFT



2. Engage the self-locking collar.

3. Tighten the self-screw . . . bearing is locked to the shaft.

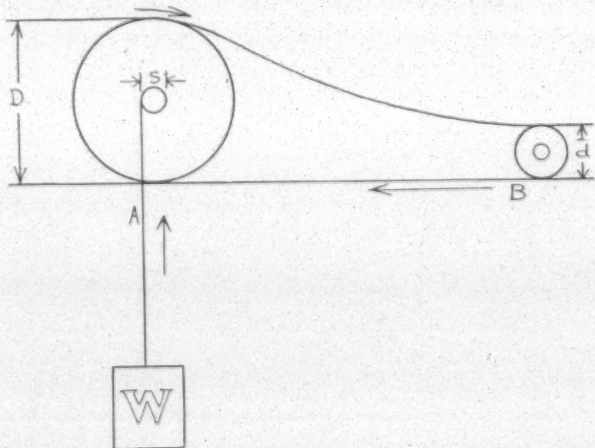
FAFNIR

BALL BEARINGS

Maintaining Maximum Belt Operation

By W. F. SCHAPHORST, Mechanical Engineer

MANY belt users still doubt that each per cent of belt slip causes one per cent loss of power. This writer has been asked for proof so often that he has decided to put the proof in print and make the explanation as clear as possible.



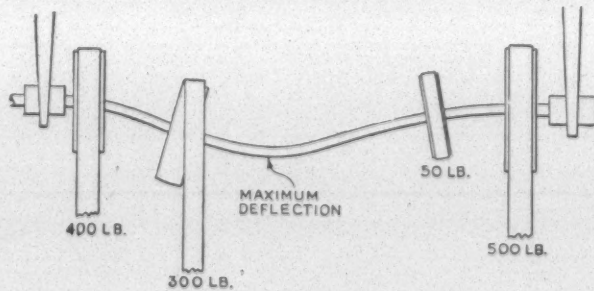
The accompanying sketch shows a combination hoisting engine and belt drive. First, forget about the belt and consider only the weight *W* which is being lifted by cable *A* around shaft *S*. If the weight weighs 33,000 pounds, and if the hoist lifts that weight one foot in one minute it does the work of one horsepower. Now if the shaft is equipped with a clutch adjusted so that after the weight is lifted a few feet the clutch is allowed to slip in such a way that the weight is suspended in mid-air, so that it does not move upward or downward while the engine is running at normal speed, it is evident that the weight is being held there by the friction of the clutch. If there were no friction the weight would fall. Tension in cable *A* is 33,000 pounds. Therefore the engine is doing work even though the weight does not move a thousandth of an inch. In fact, it is obvious that the engine is doing just as much work as it would be doing if the weight were moving upward at the rate of one foot per minute. If this is not fully clear the writer suggests that the reader study the principles of the Prony brake, available in many engineering textbooks and handbooks. A Prony brake does not move at all, the scales do not move, and in this illustration the weight *W* does not move when slip is 100 per cent.

Now forget about the weight and let us convert the en-

gine over to belt drive. The belt on pulley *D* drives the smaller pulley "*d*," the direction of motion of the engine, speed, power, and everything else being the same as before except that weight *W* is detached. If the belt does not move at all, and if the tensions in the belt are the same as when pulling full load, it is clear that the engine will be dissipating energy at the same rate at which it is spent when pulling full load. Instead of having a slipping clutch we now have a slipping belt *B*. We have another form of Prony brake. There will be no transmission of power to pulley "*d*." Therefore 100 per cent of the power will be lost.

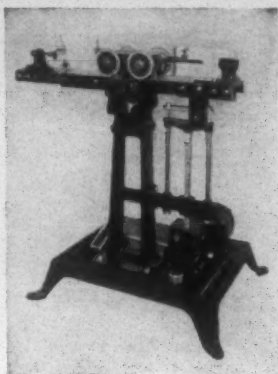
Likewise if the belt slip is 50 per cent, one-half of the power will be lost in friction and the other half will go to pulley "*d*." And where there is no belt slip whatever, no power will be wasted due to slip. The power loss is always directly proportional to the belt slip. Thus if the belt slip is two per cent the power loss is two per cent. If the belt slip is 100 per cent the power loss is 100 per cent.

Belt slip on important drives is expensive not only in the cost of wasted fuel but also in the cost of the rapidly wearing out loss, is often directly proportional to belt slip.



The sketch above shows why belts often become disengaged from pulleys. For instance, the belt marked "300 lb." is so far from a hanger that the 300-pound belt pull causes the shaft to deflect seriously. Because of that deflection the pulley itself is tilted, as shown, and the belt is just about certain to run off. Another hanger placed between the 300-pound and 50-pound pulleys would obviously prevent serious deflection and the belts would remain on their respective pulleys.

The 400-pound and 500-pound pulleys are all right because they are close to hangers, with their belts consequently less likely to run off. The belt of the 50-pound pulley is horizontal, but due to the deflection of the shaft it may also



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give trouble. In this sketch the deflection is exaggerated so as to illustrate the idea clearly. It takes very little misalignment to throw a pulley off seriously enough to cause a belt to become disengaged. The important thing is to always keep pulleys aligned. Belts will then stay on, provided they are not overloaded.

Phillips Heads Alabama Operating Executives

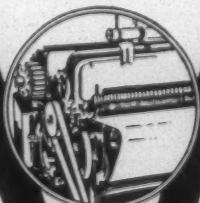
At an executive committee meeting of the Alabama Textile Operating Executives held at Birmingham March 18, Fred F. Phillips, vice-president of Buck Creek Cotton mills at Siluria, was elected general chairman of the organization. Newly-elected vice-chairman is Holmes Floyd, superintendent of Tallasee Mills. C. H. Moody, Fred Lyons and Ira E. Gunn were elected associate members of the executive committee. Other members of the executive committee present at the meeting were H. B. Bergfeld, Robert Rear-den, B. H. Crawford and A. H. Randall.

The committee decided that a second discussion-by-mail would be arranged, the subject to be slashing and weaving. Results of the discussion will be printed in a pamphlet which will be distributed to all Alabama mills and to operating executive groups in other states.

Mills Receive Directions On Duck

To meet military requirements for Army shelter tenting and numbered duck, totaling nearly 300,000,000 yards, for the remainder of 1944, the cotton branch of the War Production Board has issued directions to all integrated producers of these materials. The directions, issued to mills and manufacturers, provide that producers of these types of duck restore production to the levels attained by them during the first quarter of 1943. Efforts will be made to provide for adequate distribution of yarns to the extent that such yarns are available. WPB pointed out, however, that all uses of yarns in the mills covered by these directions will be scrutinized carefully, since the entire production must be employed only in essential production.

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Patent Case Won By Inventor

A judgment awarding \$185,801 in royalties to a cotton machinery invention, entered in the Federal District Court at Greensboro, N. C., was affirmed in an opinion handed down recently by the Fourth United States Circuit Court of Appeals at the opening session of the March term at Richmond, Va.

The inventor, W. G. Reynolds, originally brought the suit to recover royalties under a contract with Saco-Lowell Shops, and had been awarded the judgment by the district court. It was from this judgment that Saco-Lowell appealed.

Mr. Reynolds' invention was for an improved process of cotton roving. He had been employed by Saco-Lowell while working on this invention and had been paid royalties in excess of \$100,000 on other patents. The appellate court held that his cotton roving invention merited the royalties under terms of a license agreement with Saco-Lowell. Interested in the case, as half-owner of Mr. Reynolds' patent, was Terrell Machine Co. of Charlotte, N. C.

Fabric Napping Compound Is Developed

The development of Nopco Nap, an electro-chemical compound, formulated to aid in the napping of fabrics, has been announced by National Oil Products Co. of Harrison, N. J.

Nopco Nap is said to impart utmost softness to napped goods and at the same time help to overcome tendering, because it enables the fibers to yield to the action of the napper without being pulled out or broken. It is particularly valuable on lightweight constructions.

Nopco Nap is equally effective on camel hair, wool mixtures, cotton, rayon and all the synthetic fibers. It is said to ideal be for velveteens, doeskins, blankets, flannels and fabrics of similar character. It is not specifically recommended for use on white goods. It is especially beneficial on mixed stocks of low serrative power. Its use will not impart an oily feel or odor to the goods.

Booklet Commemorates 25th Anniversary

Activities of the Association of Cotton Textile Merchants of New York during the past quarter-century are described in an interesting booklet "25 Years," now being distributed by the organization. This limited edition summarizes Worth Street history, the association's beginning and progress to date, Worth Street rules, and contributions of the cotton textile industry during the two world wars. The booklet is attractively and appropriately bound with shelter tent duck printed in the camouflage pattern of the Marine Corps.

Where dyestuffs, over and above regular quotas, are needed in the production of essential textile fabrics for both military and civilian use, authorization for additional quantities may be granted, the War Production Board has announced. The authority for the additional quantities, to be used as specifically directed, will be given either in the form of individual letters or published directions. The action was taken in amendments issued to Conservation Order M-103, which controls the use of organic coloring matter.

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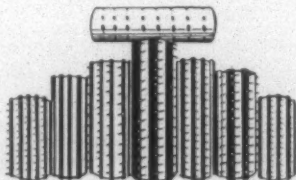
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PRACTICAL MILL SUPERINTENDENT wants position in weaving mill, cotton or rayon. Several years' experience as superintendent and overseer. Draft exempt. Will come for interview. Address "Box 1944," c/o Textile Bulletin.

WANTED—Position as superintendent. Have long experience on both G. P. and K. F. yarns; can furnish best of references; can grade cotton also and keep up with the cost. Good manager of help and sober. Address "H. T. J.," c/o Textile Bulletin.

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OVERSEER JACQUARDS, now employed, will consider change to something better. Experienced with hand change and automatic looms on cotton upholstery. Understands expansion and post-war possibilities on this type work. Married, one child, draft exempt. Some textile education, and near 30 years old. Will consider any state in U. S. A. Address "Box 317," care Textile Bulletin.

POSITION WANTED by Textile Engineer. Draft free, 33 years old. Have made wide study of labor relations and personnel work; also safety engineering. Would like position that offers something after the war. Prefer textile plant in the Southeast. Address "Box C-O," care Textile Bulletin.

OVERSEER CARDING and SPINNING now available. Experienced with carded and combed yarns. Cotton Rayon and Wool blends. Good manager of help. Married. Age 35. Draft exempt. Address "Box 198," care Textile Bulletin.

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Index to Advertisers

	Page		Page
-A-		-K-	
Akron Belting Co.	43	Keever Starch Co.	34
Allen Co.	51		
Arkansas Co.	6	-L-	
Armstrong Cork Co.	4-5	Loper, Ralph E.	46
Baily & Co., Joshua L.	38	Luttrell & Co., C. E.	36
-B-		-N-	
Barium Reduction Corp.	53	National Ring Traveler Co.	45
Barkley Machine Works	46	Nelsler Mills	38
Burkart-Schier Chemical Co.	34-35	N. Y. & N. J. Lubricant Co.	Front Cover
-C-		Norlander-Young Machine Co.	51
Carolina Refractories Co.	42	-P-	
Clinton Co.	29	Peach & Co., D. W.	27
Corn Products Refining Co.	27	Pease & Co., J. N.	44
Crabb & Co., William	45		
Cundiff, John O.	37	-R-	
Curran & Barry	38	Raymond Service, Inc., Chas. P.	37
-D-		Rhoads & Son, J. E.	39
Daniel Construction Co.	36	Rice Dobby Chain Co.	49
Dary Ring Traveler Co.	42	-S-	
Dayton Rubber Mfg. Co.	13	Scott Co., Henry L.	34
Denison Mfg. Co.	41	Seydel-Woolley & Co.	29
Dunning & Boschert Press Co.	49	Sonoco Products	2
-E-		Southern Belting Co.	42
Eaton, Paul B.	36	Southern Standard Mill Supply Co.	36
Engineering Sales Co.	51	Steel Heddle Mfg. Co.	21
-F-		Stein, Hall & Co.	27
Fafnir Bearing Co.	32	Stevens & Co., Inc., J. P.	38
-G-		Stewart Machine Co., Inc.	49
Gossett Machine Works	42	-T-	
Greensboro Loom Reed Co.	46	Terrell Machine Co.	51
Greenville Belting Co.	36	Textile Apron Co.	29
Gulf Refining Co.	15	Texwood Mfg. & Sales Co.	49
-H-		-V-	
Habow Chemical Co.	51	Valentine & Co., J. W.	39
Houghton Wool Co.	29	Vanderbilt Hotel	53
-I-		Veeder-Root, Inc.	Back Cover
Ideal Machine Co.	3-17	Victor Ring Traveler Co.	44
Iselin-Jefferson Co.	38	Vogel Co., Joseph A.	53
-J-		-W-	
Jarrett & Co., Cecil H.	46	WAK Industries	27
Jenkins Metal Co.	49	Watson-Williams Mfg. Co.	51
Johnson Chemical Co.	49	Wellington, Sears Co.	38
		Whitehead Machinery Co., Troy	36
		Whitin Machine Works	8
		Whitinsville Spinning Ring Co.	43
		Wolf & Co., Jacques	11

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Cotton Goods Market

NEW YORK.—Worth Street selling houses have lately been concentrating their activities on meeting government requirements and studying reports on sales during the first quarter. Actual trading in gray goods has been of a limited character, with only minor sales on high priority ratings put through in various centers. Approach of the close of the first quarter found many sellers in fairly good position in respect to meeting quotas established in M-317, and highly hopeful that operations under this regulation would be accomplished with less difficulty during the second quarter.

The parade of customers has showed no diminishing, but sellers still maintain a cautious policy in so far as accepting future bookings. Many buyers in receipt of orders from foreign customers are reportedly getting goods lined up for purchase during the second quarter, but are said to be awaiting export licenses.

The print cloth section has presented a dull appearance, with hardly any outward sign of activity. Regular customers especially are in a quandary over their inability to pick up supplies. In several converting houses the hopes had been held out that time would bring out end of quarter coverages, but no such development has been observed. Scattered sales of sheetings are mentioned here and there, but not enough to arouse any interest.

Textile bag manufacturers, hard pressed for their products during the past several months, report themselves in a dilemma on the question of obtaining adequate supplies.

With the nation's leaders clamoring for increased production of agricultural crops and tremendous military demands, it is pointed out that it is to be expected that the needs for bagging materials would be greater. Admitting that they have been favored in some respects in the matter of a fair priority rating, bag producers assert that the yardages received have not been sufficient if they are to fill all the expectations of the government and industry.

Recent increases in allotments of burlap are felt to be the result of WPB's recognition of the lack of cotton goods and the necessity for making up the deficit. However, supplies of burlap that the trade can receive are limited to imports, and the outlook in India at the present time is considered discouraging because of the fighting there.

In view of these considerations, the point is made that possibly the Defense Supplies Corp. would release some of its holdings of cottons and burlap to alleviate the tightness in the supply situation.

Large military demands and directives on mills for countless quantities of cloth have taken up much of the production of cotton mills for the next few months, and bag men are apprehensive over the outlook.

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Cotton Yarns Market

PHILADELPHIA.—Market reports indicate that the sale cotton yarn spinners now have their part of the big military cotton duck buying program well in hand. The yarns involved are mostly 7s/2 carded and 12s/2, together with smaller totals of 9s/2 and 10s/2. According to this information the Army Engineers Corps, while not getting all the coverage originally sought, made much better headway than was expected. A short while back it was thought WPB might have to furnish a directive to enable the procurement officers to get the required yardage for the deliveries sought.

In some quarters houses largely identified with assembling yarn for duck procurements state that their sources lately have been turning out coarse carded counts on about the same scale as a year ago, despite spotty condition of their manpower supply. That is, yarn output occasionally is hit by lack of help, but later on the deficit can be made good. It is pointed out that this compares favorably with the position of the majority of sale yarn sources.

Supply of 30s carded and nearby counts for wire covering on government orders also is said to be reasonably satisfactory, though less so than in the case of the duck yarns, partly because of the much more rapid output of the coarser numbers as compared with the 30s.

Distributors report some yarn mills have received cancellations of contracts for cotton yarns intended for part-wool (75 per cent cotton) underwear for the Army, involving about 400,000 pounds of carded cotton yarn, which would have been applied to the delivery during April, May and June of upward of 760,000 units of this type of underwear.

As understood in the trade, this transaction is connected with an Army purchase made last June, under Neg. No. 220, of about six million units of underwear, of which 3,400,000 units were to be 75 per cent cotton and 25 per cent wool. In August the manufacturers were instructed to postpone deliveries as of Sept. 1, shipments to be resumed Jan. 1, 1944, and continued over the first half of this year.

At the Philadelphia Quartermaster Depot it was stated the foregoing report probably refers to a "reconversion" of the undelivered 75-25 underwear to 50 per cent cotton and 50 per cent woolen underwear. That is, in order to complete the deliveries on Neg. No. 220, it will take less cotton knitting yarn and more merino yarn. But, as recently noted, a new procurement of around six million units of underwear soon was expected to be released by the depot, all of which would be 50-50.

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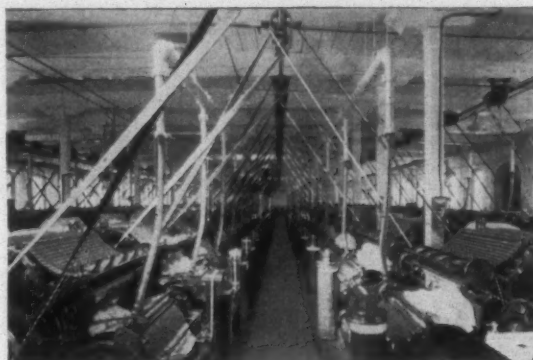
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Operating Executives Discuss Rayon Staple

(Continued from Page 23)

MR. CULPEPPER: As to the essential changes on the fly frames, possibly the most important one is the question of twist. The average rayon staple requires possibly 25 per cent less twist than normal length cotton. That is the most important change. At the same time, when this change is made you naturally decrease your front roll speed to compensate for it. The tension is very important. I have seen uneven yarn traced to too tight tension on the fly frames, where the stock was apparently running all right. Staple is being run on all types of frame, the conventional, the very high draft machines, the long draft, and the medium draft, all with good results, I believe. For blends, especially complicated blends, it is well to have at least two processes of roving, in order to have an increased amount of doublings. That is particularly necessary if you do not have a very adequate blending and opening room. However, very good blends are made in one-process where you have very good blending before you reach this process.

I think there are no particular changes other than the twist and the tension. The dull generally requires a little less twist than the bright.

The Twist Factors

CHAIRMAN BOWEN: "What are the best methods of spinning rayon staples, and what twist factors give maximum strength for the various deniers? What is the approximate limit of spin of each denier? What is the effect of increased twist on yarn strength?"

MR. CULPEPPER: I do not know what is the best method and had rather not answer the question on that basis. But long draft spinning produces superior yarns. The twist factors run from 2.75 to 3.25. On 1.0 denier staple the maximum strength is about 2.9; on $1\frac{1}{2}$ it is 2.9 or possibly three. When you get to coarser deniers the twist factor is slightly higher, 3.1 or 3.2.

As to the limit of spin—I do not want to be held to this too closely. Let's start off with one denier. It is being spun now satisfactorily up as far as 100/s. We have spun it experimentally much finer than that; $1\frac{1}{4}$ denier is being spun as fine as 80/s. With $1\frac{1}{2}$ denier they generally do not go over 60/s.

QUESTION: What length is that?

MR. CULPEPPER: $1\frac{1}{2}$ denier, $1\frac{9}{16}$.

Normally, with 3.0 denier, $1\frac{9}{16}$, you would not expect to get very much higher than 22/s, but you possibly could get up to 24/s on a two-inch staple. I would not recommend going higher than 30/s on $2\frac{1}{2}$. As I said before, 14/s from 5.5 denier is about the limit we consider practical for spinning.

QUESTION: Is that double roving or single roving?

MR. CULPEPPER: It is double roving.

As to the effect of increased twist on yarn strength, there is a definite effect on yarn strength. After leaving the optimum twist, every turn that is put in means a decrease in strength. We generally figure ten per cent for every five turns of twist. Of course, certain types of fabrics have to have higher twists, to produce the desired fabric hand, and go up to four or $4\frac{1}{4}$, but with reduction in strength. Sometimes a little finer denier is put in, in order to maintain the

strength. You can use a little fine denier mixed in with coarse deniers to help hold the strength up.

QUESTION: Is it better to sacrifice a little strength in order to increase the weaving qualities of the yarn?

MR. CULPEPPER: That is why we possibly use a twist multiple higher than what gives best strength; it ties the fibers down a little better. The ordinary mill, I think, uses a little higher twist multiple than three.

CHAIRMAN BOWEN: "What percentage of the inherent fiber strength do you realize on spun yarn?"

MR. CULPEPPER: The inherent fiber strength, I would say, varies from about 65 per cent to about 80. In other words, you obtain that percentage of the same size of continuous filament yarn. On the coarser counts the percentage is higher because of the increased number of fibers in a cross section of the yarn. I am not sure but I do not believe that on cotton you obtain anything like that high percentage of inherent fiber strength, because the cotton fibers will break at about 4.5 grams per denier when dry. Rayon staple runs 2.5 or three when dry. So you lose more strength in spinning the cotton fiber than rayon, due perhaps to non-uniformity in staple length.

QUESTION: In the storage of rayon yarn over the weekend what do you suggest for atmospheric conditions?

MR. CULPEPPER: I believe you probably have reference to its sloughing off a lot when you start up on Monday morning. Rayon fiber, when it becomes wet, has a tendency to swell. If that is allowed to dry out, the yarn on the bobbin will become loose. I would recommend that filling be stored under the same conditions as in the weave room. If allowed to dry out it can cause trouble. If you take a bobbin of rayon filling and wet it and let it dry you can take the whole bobbin of yarn and pull it right off. It stretches and does not go back. So I think it would be well to have your storage conditions somewhat like those in the weave room.

Tow-to-Top

QUESTION: Have you heard anything about the process for rayon from tow-to-top, to do away with the mixing up and blending?

MR. CULPEPPER: I have heard something about it. It is being done on one or two types of machines. On the cotton system some work is being done on the idea, but I do not think it has the same economics as it has on the worsted system, because the cost of making the tow would be fully equal to the picking and carding cost. But it may increase the types of yarn that could be made. In other words, you could have cleaner yarn. You would not have as much trouble with neps. With coarser yarns you could spin finer yarns. But I do not think for the immediate future there is going to be very much done on the cotton system.

CHAIRMAN BOWEN: Thank you very much, Mr. Culpepper. We have with us Carl Brandt of the research department of the Whittin Machine Works, who has done much work in the spinning of synthetic fibers and blends; we shall be glad to hear from him now.

MR. BRANDT: There is one factor about tinting that I might mention. We have found it is not good practice to put into a machine, especially a card, any fiber that is wet.

As you know, if you moisten the rayon fiber you lost a great deal of its strength; it becomes weak. When it passes to the licker-in and the cylinder there is a tendency to tear that and weaken the staple. We have proved that by making diagrams after tinting the stock. You will find, if you lay out your fiber carefully, the tail end is generally the weakest part. In other words, it is the part that has received the moisture. So I think after tinting it is better to stir the stock until the moisture in any one spot has had time to spread and not process it while the wet fiber is likely to be torn apart.

Now, about blending. Lots of times we mix fibers of different densities. If you blow the stock the heavy fiber will fall in a certain spot, and the lighter will separate itself in another. That also applies to blending feeders. You have to be careful that the heavier stock does not blow off to one spot.

Best Card for Blending

Another question is about which type of card does better blending. We feel, as Mr. Gwaltney does, that the roller top is a better blender than the flat card. In that card you have the action of pulling it off the roller, putting it back and pulling it off, and putting it back; and we think that is the very best type of blending. On short staple, fine denier, maybe the roller-top card is not needed. In fact, we know the flat card does an excellent job of blending on that.

As to neps, you might have a very low nep count in your card web and during the subsequent processes build that up, due to the tendency to form neps as it goes along.

There are one or two things on which I should like to note your reaction, for our benefit. One is about the staple length. Some mills are willing to run anything from 1½ inches to three inches. How many think serious of running three-inch stock? We very seldom see it in the mill. Strength does not increase directly as length, but I would say something like the square of the difference. It would simplify our problems greatly if someone would say: "Let's stop at two inches." Then we would not have to worry about long lengths.

MR. GWALTNEY: I agree with you, Mr. Brandt. If we can build a machine to handle two inches and stop at that it would simplify the problem very much. You have to compromise now.

MR. BRANDT: It would be a great advantage, as Mr. Gwaltney said, if we could limit the length and build machines designed to handle certain lengths.

I do think, if we had a common system to measure or number by, that in the time to come, in the future, it would be of great value to all spinners. At present we have the woolen system, the worsted system, and the cotton system. I think there is a definite field for some common or universal numbering system.

QUESTION: Is it the tendency to use larger diameter rolls with longer staple?

MR. BRANDT: That is right. As the staple becomes longer it is the tendency to use larger diameter rolls, and I think that is correct. There is less tendency to lick up.

MR. CLARK: Mr. Brandt, do you anticipate that after this war a large number of mills now spinning cotton will be spinning rayon?

MR. BRANDT: That is my personal opinion. I think a

lot of you men now spinning cotton will be running rayon, whether you want to or not. Personally, I think you will find an advantage in spinning rayon.

MR. CLARK: We figure the waste on cotton as 15 per cent. What do you figure as the waste in rayon?

MR. BRANDT: Personally, I think you should take out some waste. It is not a good thing to blanket all your screens and keep everything in your stock. I think some waste should come out.

MR. CLARK: In figuring the waste on rayon would you allow four or five per cent?

MR. BRANDT: I would say that is about right.

MR. CLARK: Against 15 per cent on cotton?

MR. BRANDT: Yes. Now, that is valuable waste, and it should be reworked some way. Perhaps you could put all your waste into one yarn number.

There has been a good deal of discussion about tow-to-top. Tow is the fiber in its continuous form. It may be the size of your finger or the size of your wrist. They pass that through the cutter and cut it generally while it is wet. There is one system in which it is the size of my thumb. We have had a small one produced, weighing 60 grams, 5½ denier, 3½ inches, and we spun a very creditable 30 from that.

One thing we noticed about that type of yarn; it becomes quite flat. I believe if you should make that into a fabric it would lack the fullness and the feel that you get if you put the stock through the picker and the card.

QUESTION: Is that cotton count?

MR. BRANDT: Cotton count, 30/s. That is fairly fine. The use of that is limited. I do not think it will ever replace the cut staple that is used on the cotton system. It can be done, but whether it is economical or not I do not know. You can spin much smoother yarn, and it is freer of neps, but whether you want to pay the cost or not I do not know.

MR. GWALTNEY: There would be more freight to pay on it, because it is wound on some sort of cone, which increases the cost in the beginning. Wouldn't that be a handicap?

MR. BRANDT: I do know that at the present time you can make the spun-type yarn much more cheaply than you can make it from the tow-to-top. It is an economic question which is better.

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Piedmont Division Studies Long Draft Spinning

(Continued from Page 16)

than the old clearer could stand. Another thing—we are recommending the Shaw system only on combed yarns.

We have generally recommended the revolving type of clearer. Now, we had quite a bit of trouble getting the Roth clearer to scrub the rolls, to give the scrubbing action on the rolls that the flat clearer does and yet wind up the waste. Mr. Shaw has worked out the design, which is a very ingenious device. When you take off the waste it is like tearing off a piece of felt, but it is all clearer waste.

Then we had another problem—that of keeping the back rolls clean. We found we would wind up with a rat tail. So Wes Lane devised this clearer, which has a scrubbing action on the back rolls. When put on a table it rolls as if it were round, but it is not. All the bosses are staggered.

I ran a long test with roving from one of our neighboring combed yarn mills using three-hank one-process roving, double-creeled, spinning 60/s yarn; and it broke nearly 15 per cent better than the mill's three-process roving and looked much better when put on the seriplane. We have run numberless tests with the Shaw and other systems, and with the same shaft the Shaw invariably produced the best and strongest yarns.

The Shaw system has been held back for two reasons. First, and most compelling, we have had to drop textiles for war work, not partially but completely. Second, as drafts are increased the problem of fly and clearer waste becomes more difficult, and we have had to improve our clearer and weighting systems to take care of this, as I have indicated. We have also had to develop the technique of operating this new method of drafting. We also wanted to have a very large installation run for some time before we released the Shaw system for general use, as all new machines have to have some minor changes made that show up only on a large unit. We have had one installation of 98 frames running for about one year, and the results at this mill have met all of our expectations.

One of the remarkable features of this system is its flexibility, in that the mills making a large range of numbers use only a few hank rovings and do not have to change roller settings even with considerable changes of staple lengths.

Frankly, commercially we recommend that drafts be held down to somewhere in the neighborhood of 30. Experimentally, go as far as you like. If there are any questions you wish to ask I shall be glad to try to answer them.

QUESTION: What length of staple?

MR. GWALTNEY: The frame will handle up to 1½ inches. We have gone up to two inches.

QUESTION: What break draft do you recommend?

MR. GWALTNEY: We do not know. One of our very good friends discovered that in his mill he does not set rolls any more; he just changes the break draft. It is a lead-pipe cinch. We do not know. The Shaw frame is quite new, as you know, and running a few frames does not tell us. When we have had a hundred frames running for some time perhaps we can tell you.

MARSHALL DILLING, executive secretary, Southern Textile Association: What is the setting between the bite of the second and third rolls?

MR. GWALTNEY: That varies. I have Mr. Price here today. What is that, Frank?

FRANK PRICE: On staples up to $1\frac{1}{2}$ -inch we only have them open up to $\frac{1}{16}$, for $1\frac{1}{8}$ or $1\frac{3}{16}$, or something like that.

MR. DILLING: I am talking about the back, though, between the second and third rolls.

MR. PRICE: It is $1\frac{5}{8}$ inches in the break draft.

MR. GWALTNEY: We have been running our experiments on one frame, and then we set up this 100-frame unit. They have had a year now to try every kind of setting they can think of.

MR. DILLING: I was in a mill a few days ago that had a break draft of 1.47.

MR. GWALTNEY: I think Shaw has taught us a lot about break drafts. We have run the break draft on this frame as high as 2.5. The range on break draft on the usual frame I would say would be between 1.4 and 2.2, although it rarely gets that high.

MR. DILLING: Doesn't that cause unevenness, if the break draft is that high? It will pull it out unevenly; it will not draw uniformly.

MR. GWALTNEY: It may appear that way, but if you test it is is not uneven. If you put that roving between your fingers and perss on it, it will immediately get smaller. That is because it is twisted. All twisted fibers will do that. I have figured all sorts of break drafts and find 1.75 is about the best. Now, remember you do not get your figured break draft. That is true of all break drafts.

QUESTION: How critical is that .035 clearance?

MR. GWALTNEY: Fairly critical. We run from 30 to 40 without any difference in the yarn.

G. H. DUNLAP, textile school, North Carolina State College: Do you recall offhand how much pressure you have on the top roll?

MR. GWALTNEY: I think it is somewhere in the neighborhood of 20 pounds.

QUESTION: Mr. Gwaltney, you talked about this condenser. Are you going to have that?

MR. GWALTNEY: Up to a reasonable draft, in the 30/s, no. I am going to let my hair down and be frank. None of us has ever broken into the fine yarn spinning in Gaston County. None of us has been able to offer anything to the combed yarn industry. You can readily understand the reason for that. You have more clearer waste on combed than on carded yarn, and the bane and curse of all long draft systems is the clearer waste. We are building some roving frames and are building one for the rayon industry. We are not saying much about it. We have a short one in the shop and are building two more. We say little about that, because we want to work it out in two or three places.

QUESTION: This system can be used on rayons, as well as combed yarns?

MR. GWALTNEY: Oh, yes. I have seen it do some beautiful work. I was talking to the manager of a rayon plant which made some 60/s and 70/s on it, of $1\frac{1}{2}$ -inch staple, and did not touch the rolls. We have run some two-inch rayon on it.



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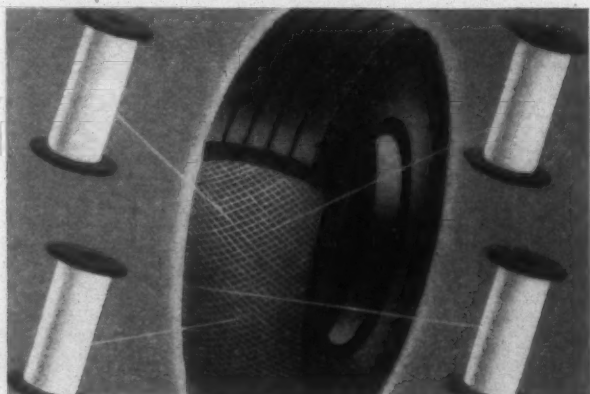
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OBITUARY

W. C. COBB

W. C. Cobb, first superintendent of Ware Shoals (S. C.) Mfg. Co. and for 50 years an important figure in the textile industry, died at the age of 81 March 27. Mr. Cobb began his career at Piedmont (S. C.) Mfg. Co., where he soon was given responsible positions. When Ware Shoals Mfg. Co. was founded in 1905 he joined the organization and constantly contributed thought and energy to practically every phase of the plant's development. He retired from work in 1926. Surviving Mr. Cobb are six daughters, two sons, a sister, 11 grandchildren and two great-grandchildren. Funeral services were held March 28 at Ware Shoals.



W. C. Cobb

F. F. BAHNSON

Frederic F. Bahnson, consulting engineer for the Bahnson Co., died last month at his home in Winston-Salem, N. C., after a serious illness of ten days. He is survived by his wife, four sons, his mother, two sisters and a brother, A. H. Bahnson. He was a brother-in-law of T. Holt Haywood of Winston-Salem, and Edward S. Reid of Charlotte.

CAPT. HOMER COOK

Capt. Homer Cook, United States Marine Corps Reserve, formerly employed in the sales department of Bibb Mfg. Co., has been reported killed in action while on duty in the Pacific area. A graduate of Georgia School of Technology, Captain Cook was awarded the Distinguished Flying Cross last fall for displaying extraordinary heroism in battle.

DR. JAMES BRODBECK

Dr. James Brodbeck, president and chairman of the board of the Society of Chemical Industry in Basle (CIBA), died suddenly last month at his home near Berne, Switzerland, at the age of 61. Dr. Brodbeck joined the staff of Ciba in 1906, and was instrumental in organizing the company's branches throughout the world and in acquiring the various Ciba plants in countries outside of Switzerland. He is survived by his wife and his son, J. J. Brodbeck, head of Ciba Pharmaceutical Products Corp. of Summit, N. J.

H. F. BROWN

H. Fletcher Brown, a vice-president and director of E. I. du Pont de Nemours & Co., died recently at the age of 76. Mr. Brown was instrumental in developing the present smokeless powder now used by the armed forces. Funeral services were held March 1 at Wilmington, Del. Mrs. Brown is the only survivor.

PETER IHRIE, JR.

Lieut. Peter Ihrie, Jr., 27, associated with Burlington Mills Corp. before entering the Army Air Forces, has been reported missing in action over Italy following the failure of the plane on which he was navigator to return from a mission. Lieutenant Ihrie was a graduate of the textile school at North Carolina State College.

Resin Finishing of Synthetic and Natural Yarn Blended Fabrics

(Continued from Page 10)

ammonium chloride will sometimes show a high pick-up of 75 to 80 per cent in the fabric on which it is applied. In such a case there is a brittleness on the finished fabric due to an excess of resin being present. This excess of resin naturally will put the finished fabric on the acid side due to the presence of ammonium chloride, which is of slightly acid nature. This causes a slight tendering of the fabric largely due to the nature of chloride compounds which create an acid condition on the fabric unless an excess of the resin is prevented from being taken up during the finishing operations. A careful overseer or finisher can carry out sufficient checks on the pick-up of the resin during its application and prevent an excess of resin mix being taken up by fabric. It is very vital that these precautions are observed, or otherwise there will be occasional lots of goods tendered.

Some precautions that the finisher and plant chemists could observe would be to have the operative at the end of the dryer frame take samples for tensile break tests and pick determination every 500 to 1,000 yards of finished fabric. Another precautionary check would be the testing of the wet and dry finished goods for acidity as well as making the tensile break test. A third precautionary check would be the prompt preparations of the mixes, never adding ammonium chloride until the quetsch operative is ready to run it into the bowl of quetsch and apply it promptly. This last check will help prevent waste as well as insure a freshly prepared mix, not one of unknown preparation time.

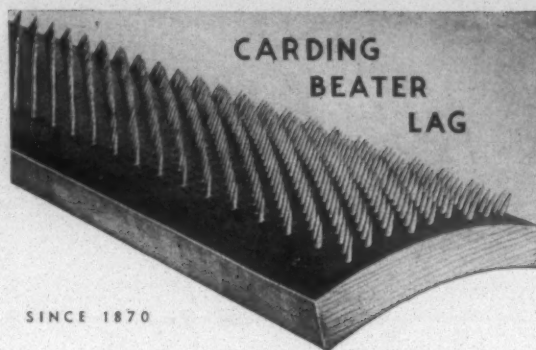
Di-ammonium phosphate has a pH of approximately 7.4. This catalyst is recommended because of its neutral nature as well as its good stability. Melamine resin mixes prepared with di-ammonium phosphate will stand for six to eight hours without polymerizing.

Ammonium thiocyanate is not widely used except when a very lustrous finish is wanted on a fabric, and is not the type desirable for rayons or other synthetics.

In applying the resin mix piece goods are dyed, dried and framed and then the resin finish is applied either on a padder or quetsch. In preparing the resin mix, the finisher uses the amount of resin necessary to obtain the finish wanted. A 20 per cent melamine resin mix is a commonly used finish, this being based on amount of water in mixing tank. A suitable 500-gallon mix is made up of 100 pounds melamine resin and 10 ounces catalyst. The melamine resin is dissolved by pouring it into the volume of water needed, which has been previously heated to 90° F. Stir thoroughly until dissolved. Dissolve the catalyst separately and add to tank when ready, then make to volume ready for applying on quetsch. The quetsch operative must check as to thorough solution before adding to quetsch through a straining cloth.

The framed dry piece goods are padded through a quetsch at 30 to 45 yards per minute, according to construction of goods being finished. Melamine resin is kept at 90° F. for best results. Experience has shown that these blended fabrics must be fed in as loosely as possible, thus permitting the goods sufficient time in the resin mix to obtain a uniform pick-up and help to reduce difference in the shade on the face and back of the finished goods. The volume of resin liquor must be kept uniform through-

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COST REDUCTION SURVEYS SPECIAL REPORTS

GREENVILLE, S.C. FALL RIVER, MASS.

out the padding of a lot and the pressure on both sides of quetsch must be checked carefully, or otherwise the finished goods will be off-balance on both pick-up and final hand of goods.

After the resin has been applied, the goods are then run through an air lay or similar type of dryer, and the resin treated goods are cured for three to five minutes at 280-300° F. The curing is of utmost importance if a satisfactory finish and hand is to be obtained. Unless the resin is properly cured it will wash out easily. After proper curing of goods, the cured fabric is given a 15 to 20-minute wash on open width washer at 130° F., using one-half per cent by volume bath of a fatty alcohol, or the goods may be washed off in a dye beck. This light washing removes the surface or uncured surplus resin. The rinsed goods are hydro-extracted, dried and framed to width ready for final inspection.

On vat dyed goods there is not any noticeable effect on either wash or light fastness, but this occurs only after a plant has carefully selected satisfactory vat colors. On direct dyed spun filament rayon goods, the light fastness is reduced and on some colors the wash fastness had been improved slightly. Spun viscose rayon shows up to 18 per cent pick-up on melamine resin finish, while spun acetate rayon will show roughly six to ten per cent pick-up. On filament acetate rayon the pick-up is low—around three per cent. Though the fibers show heavy surface coating, it is necessary to use spun acetate rayon in order to obtain satisfactory pick-up on melamine resin finish.

The type of catalyst used in the resin mix appears to have small effect on the final light and wash fastness of the finished goods. If there is any difference it is caused by reduced light fastness when an acid catalyst is used as compared to the neutral or slightly alkaline catalyst. The neutral and alkaline catalysts give more rapid curing at a slight saving in time and help production if the resin mix is properly applied to the goods. In storage, melamine resin finished goods do not develop an odor, this being especially true in warm storage rooms. There appears to be no further polymerization taking place on a properly cured fabric. The workers must be on their toes in preparing and using this resin, but it usually gives off no objectionable odors during the padding on and curing operations.

Can King Cotton Retain the Textile Throne?

(Continued from Page 9)

on that of the tightly twisted fibers. Whereas, the tensile strength of a cloth is determined by the resistance of the fibers in slipping apart, rather than the actual breakage.

"It is only in an experimental laboratory that species of cotton plants may be developed that would produce different kinds of fiber to meet highly-specialized industrial demands," Dr. Webber says.

It was indicated that cotton would face a most serious threat to its survival as the main cash crop of the South, if this type of research should not prove successful.

Several channels of research and control to achieve the development of the desired characteristics in the cotton plant are contemplated. The most likely to be successful, broad scale, "trial and error" methods, calls for a scientific, carefully-tabulated procedure of cross-breeding, in-breeding and back-breeding of certain species of cotton plants that have desired characteristics dominant, striving for limited

hypertrophical results in some of the thousands of filials resultant.

Over 17,000 cotton plants will soon be on their way to the university's laboratories from the council's plant introduction gardens in Mexico. Careful analysis of each of these and of probably many others will have to be made, Dr. Webber explains. "We'll be something like the old woman in the shoe, except we'll know what to do with all our 'children.'"

A second method of achieving the valued characteristics in the cotton plant would be the exerting or imposing of external and internal stimuli on the plant during reproductive stages. Such treatments would involve the use of the actinic X-ray and violet ray, chemical solutions such as the alkaloid, colchicine and special conditions of thermal and humidity control during pollination. Adequate finances for the experimental work are assured not only by the university's backing, but also by a budget allowance for 1944 of \$62,000 which has been furnished by the National Cotton Council.

Long fibers, short fibers, medium fibers, thick ones, slim ones and matured fibers with small lumina are some of the special characteristics which are hoped to be brought under control and localized to certain species. Incidentally, an increase in the oil content, the latent capacity for pentosan, and the increase of protein content will be other refinements sought.

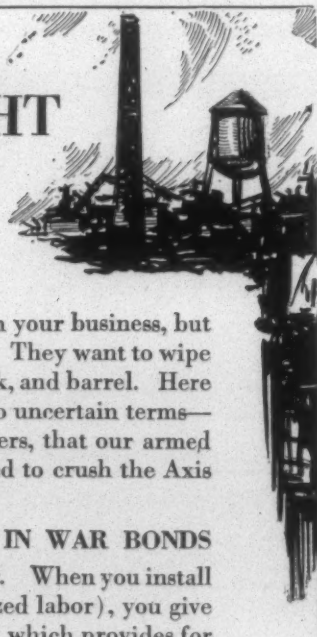
An interesting possibility from increasing the protein content of the cotton plant is explained by Dr. Webber. The protein content of cotton seed is admirably suited for

treatment in an acetate bath preparatory to the production of synthetic fiber that closely resembles wool in texture and may prove superior in wearing qualities. Thus, there would be the many-sided paradox of cotton fiber and a wool synthetic from one plant, of making the seed "produce" twice, and of developing a synthetic product from the cotton plant that will offer additional competition against the rival synthetic—rayon.

"We shall invite detailed specifications from textile manufacturers, and manufacturers of other finished products, for the establishing of our laboratory goals," Dr. Webber states. "Then, when we have achieved those goals by genetic control of the plants, the seed will be carefully labeled and distributed to certain pre-determined farm areas; the cotton thus grown will pass through the ginning and processing under its special tag to identify its type."

From the aggressiveness of the National Cotton Council, the decisive attitude of the Southern Methodist University board of trustees, the evident enthusiasm and learning of the scientists engaged, and the close alliance of the research laboratory with practical commercial interests, King Cotton may take heart and look into the future with a new measure of encouragement.

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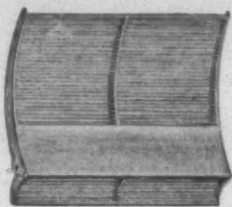
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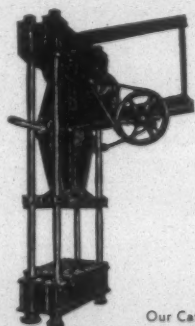
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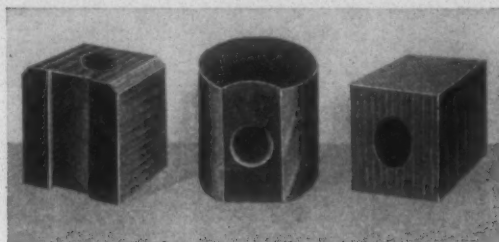
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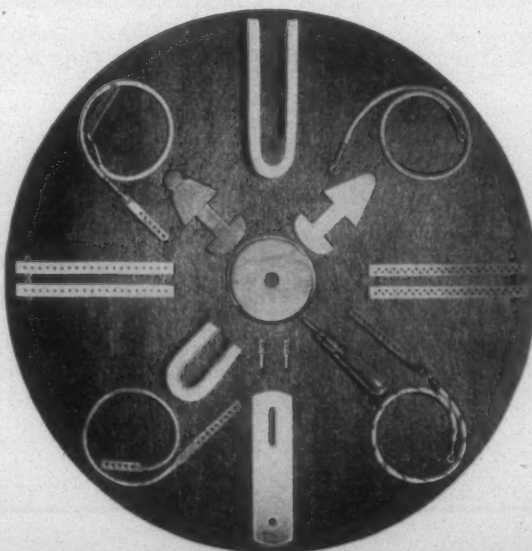
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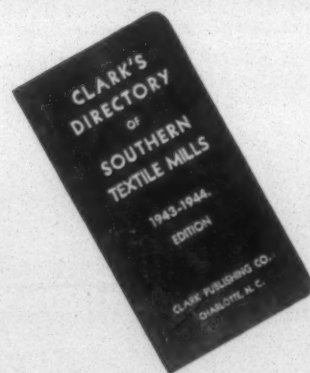
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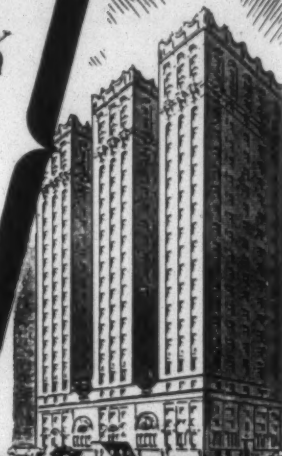
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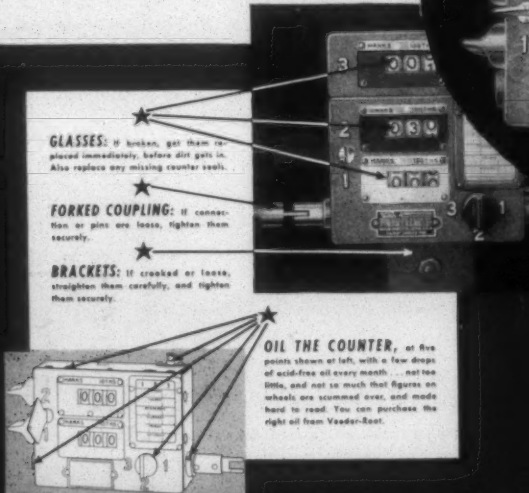
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